wwPDB EM Validation Summary Report ⓘ

Aug 25, 2025 – 12:06 am BST

PDB ID	:	9EVS / pdb_00009evs
EMDB ID	:	EMD-50011
Title	:	Structure of the flowering plant mitoribosome with P-site tRNA
Authors	:	Waltz, F.; Skaltsogiannis, V.; Giege, P.
Deposited on	:	2024-04-02
Resolution	:	3.05 Å(reported)

The following versions of software and data (see references ⓘ) were used in the production of this report:

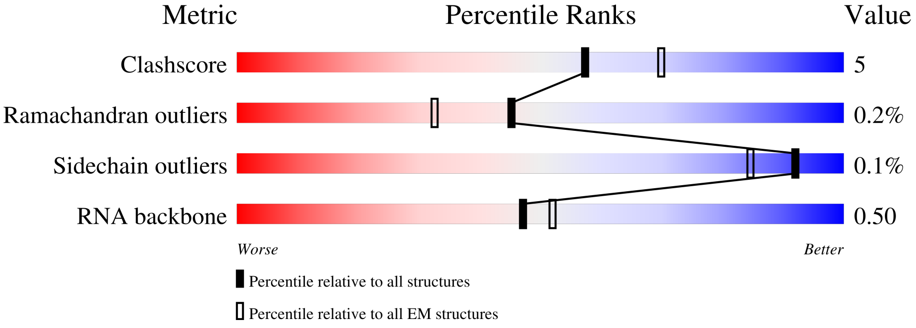
EMDB validation analysis	:	0.0.1.dev126
Mogul	:	1.8.4, CSD as541be (2020)
MolProbity	:	4-5-2 with Phenix2.0rc1
buster-report	:	1.1.7 (2018)
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.45.1

1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:
ELECTRON MICROSCOPY

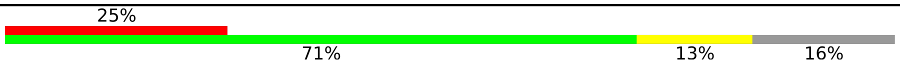
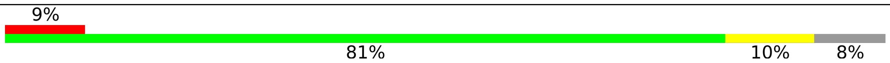
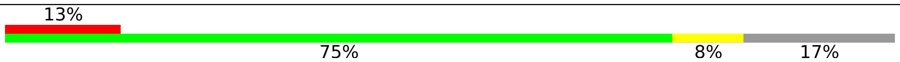
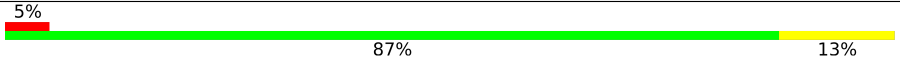
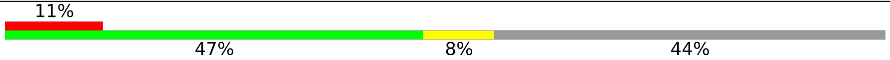
The reported resolution of this entry is 3.05 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	EM structures (#Entries)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415
RNA backbone	6643	2191

The table below summarises the geometric issues observed across the polymeric chains and their fit to the map. The red, orange, yellow and green segments of the bar indicate the fraction of residues that contain outliers for >=3, 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions <=5% The upper red bar (where present) indicates the fraction of residues that have poor fit to the EM map (all-atom inclusion < 40%). The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	B	554	
2	C	362	
3	D	501	
4	E	138	
5	F	157	
6	G	129	
7	H	383	

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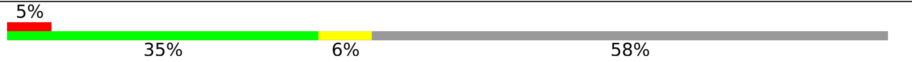
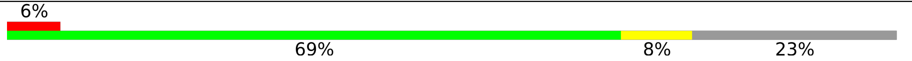
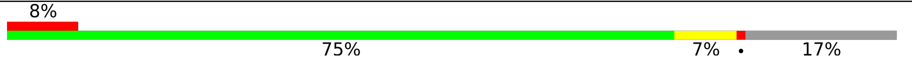
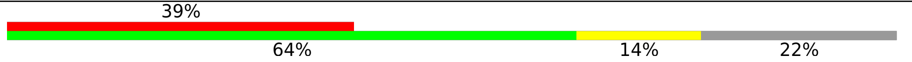
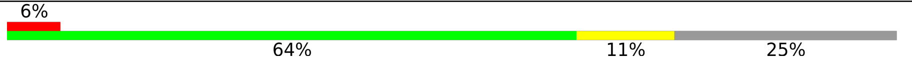
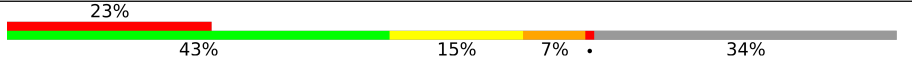
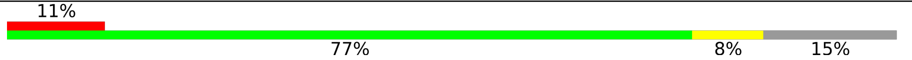
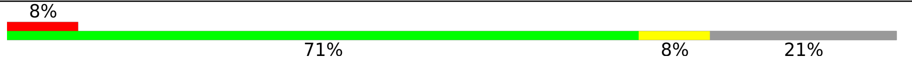
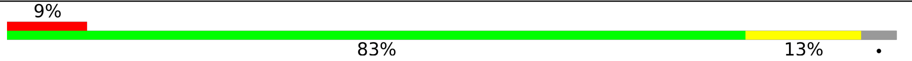
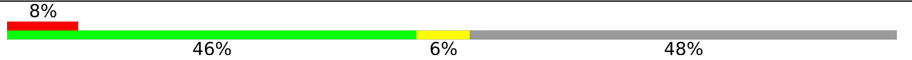
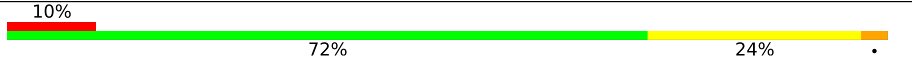
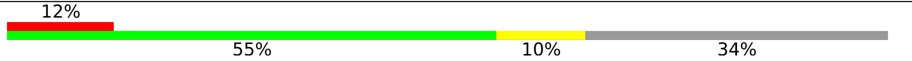
Mol	Chain	Length	Quality of chain
8	I	228	
9	J	304	
10	K	125	
11	L	154	
12	M	155	
13	N	414	
14	O	136	
15	P	110	
16	Q	237	
17	R	212	
18	S	100	
19	T	94	
20	U	192	
21	V	193	
22	W	483	
23	X	496	
24	Y	102	
25	Z	153	
26	1	2922	
27	3	118	
28	1B	220	
29	1C	327	
30	1D	319	
31	1E	297	
32	1F	185	

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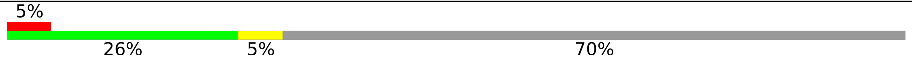
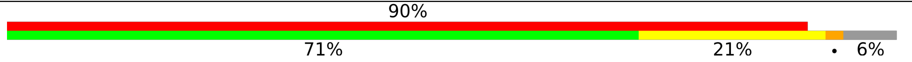
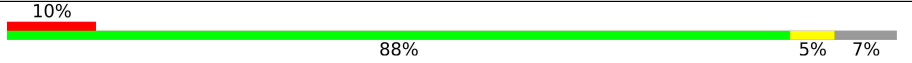
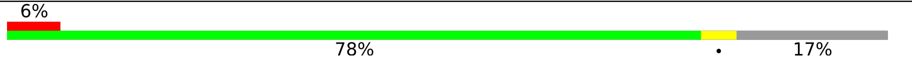
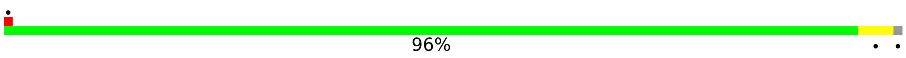
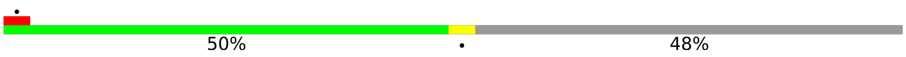
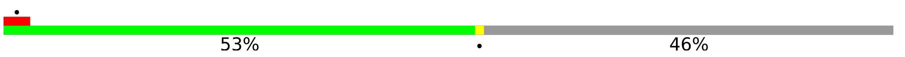
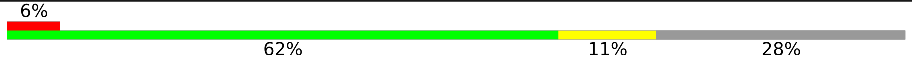
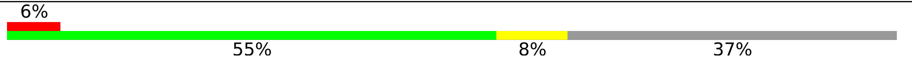
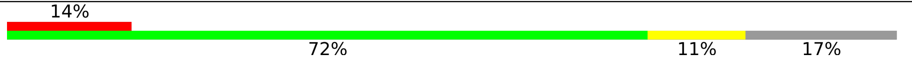
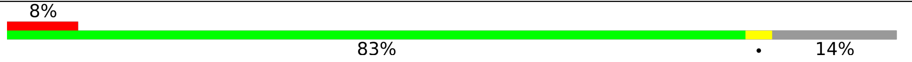
Mol	Chain	Length	Quality of chain
33	1G	102	
34	1H	219	
35	1I	170	
36	1J	156	
37	1K	204	
38	1L	176	
39	1M	281	
40	1N	179	
41	1O	160	
42	1P	114	
43	1Q	233	
44	1R	126	
45	1S	270	
46	1T	264	
47	1U	180	
48	1V	159	
49	1W	249	
50	1X	271	
51	1Y	156	
52	1Z	212	
53	1a	144	
54	1b	109	
55	1c	135	
56	1d	139	
57	1e	63	

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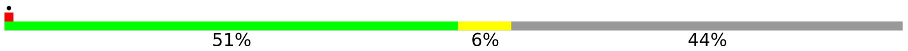
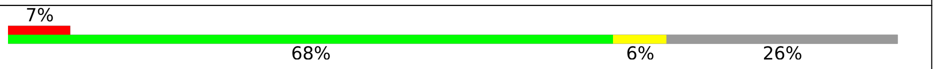
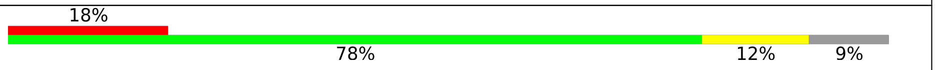
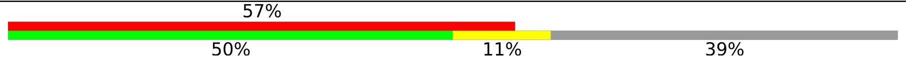
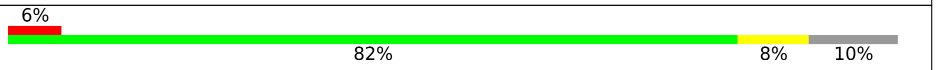
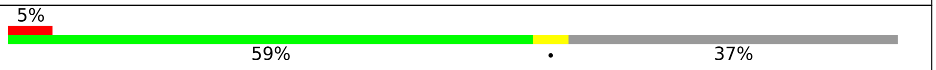
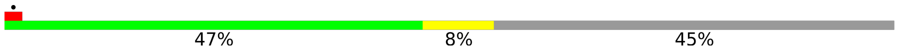
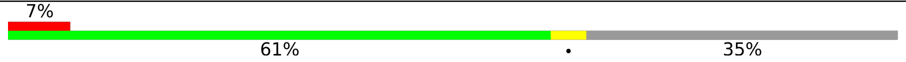
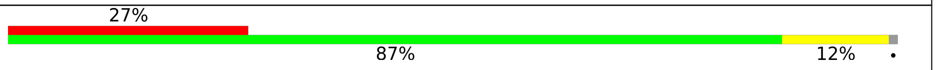
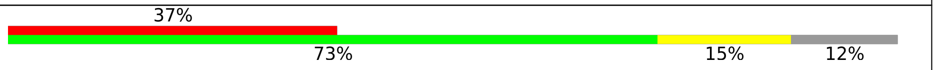
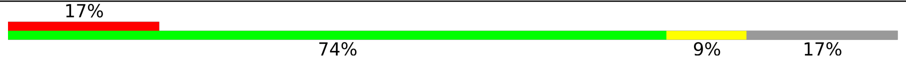
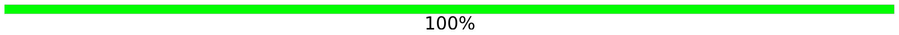
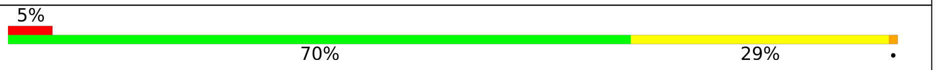
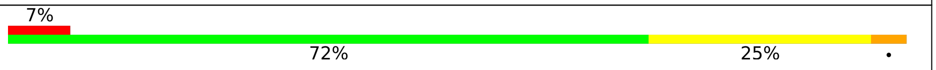
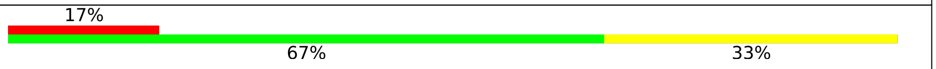
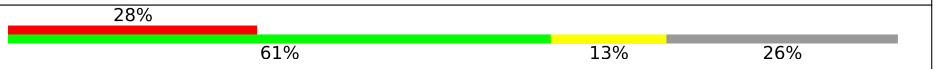
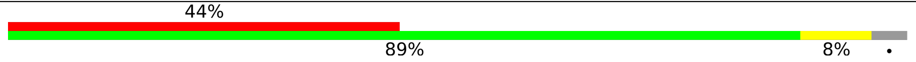
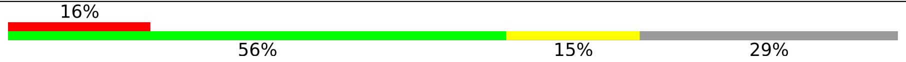
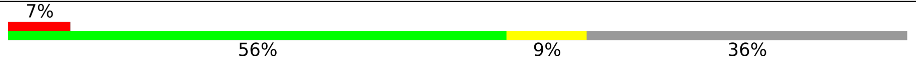
Mol	Chain	Length	Quality of chain
58	1f	146	
59	1g	162	
60	1h	103	
61	1i	247	
62	1j	90	
63	1k	119	
64	1l	233	
65	1m	128	
66	1o	125	
67	1p	130	
68	1q	79	
69	1r	167	
70	1s	181	
71	1t	491	
72	1u	757	
73	1v	521	
74	1x	4	
75	5	76	
76	2	1591	
77	6	6	
78	a	424	
79	b	80	
80	c	128	
81	d	110	
82	e	383	

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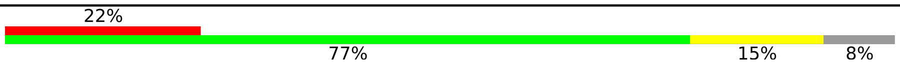
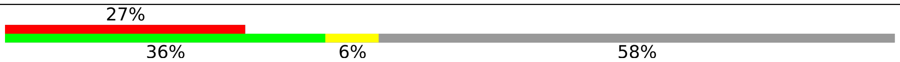
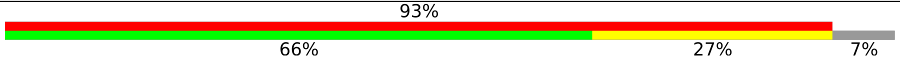
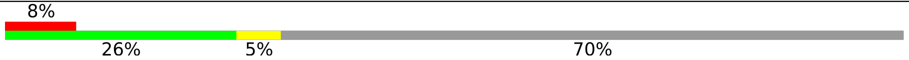
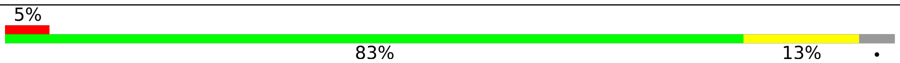
Mol	**Chain**	**Length**	**Quality of chain**
83	f	410	
84	h	384	
85	i	725	
86	j	408	
87	k	155	
88	A	212	

2 Entry composition (i)

There are 93 unique types of molecules in this entry. The entry contains 211395 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Small ribosomal subunit protein uS3m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	B	467	3877	2520	701	643	13	0	0

There are 7 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	22	TRP	ARG	conflict	UNP A0A068BCX1
B	172	LEU	SER	conflict	UNP A0A068BCX1
B	202	LYS	ARG	conflict	UNP A0A068BCX1
B	296	LEU	SER	conflict	UNP A0A068BCX1
B	512	CYS	ARG	conflict	UNP A0A068BCX1
B	524	VAL	ALA	conflict	UNP A0A068BCX1
B	533	LEU	SER	conflict	UNP A0A068BCX1

- Molecule 2 is a protein called uS4m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	C	333	2811	1798	540	462	11	0	0

- Molecule 3 is a protein called uS5m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	D	417	3425	2146	603	664	12	0	0

- Molecule 4 is a protein called bS6m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	E	101	823	535	145	138	5	0	0

- Molecule 5 is a protein called uS7m,Small ribosomal subunit protein uS7m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	F	157	1254	793	244	213	4	0	0

- Molecule 6 is a protein called uS8m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	G	128	1037	652	193	189	3	0	0

- Molecule 7 is a protein called uS9m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	H	213	1682	1054	312	311	5	0	0

- Molecule 8 is a protein called uS10m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	I	113	941	602	174	159	6	0	0

- Molecule 9 is a protein called uS11m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	J	127	988	608	195	181	4	0	0

- Molecule 10 is a protein called uS12m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	K	124	992	613	208	167	4	0	0

- Molecule 11 is a protein called uS13m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	L	119	940	572	200	163	5	0	0

- Molecule 12 is a protein called uS14m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	M	101	843	524	174	140	5	0	0

- Molecule 13 is a protein called uS15m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	N	116	941	593	170	171	7	0	0

- Molecule 14 is a protein called bS16m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	O	110	869	550	169	144	6	0	0

- Molecule 15 is a protein called uS17m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	P	91	717	455	135	124	3	0	0

- Molecule 16 is a protein called bS18m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	Q	90	724	460	127	134	3	0	0

- Molecule 17 is a protein called uS19m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
17	R	166	1299	819	236	237	7	0	0

- Molecule 18 is a protein called bS21m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	S	75	611	386	120	103	2	0	0

- Molecule 19 is a protein called bTHXm.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
19	T	50	408	260	79	68	1	0	0

- Molecule 20 is a protein called mS23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	U	127	1014	647	184	178	5	0	0

- Molecule 21 is a protein called mS26.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
21	V	164	1399	874	266	255	4	0	0

- Molecule 22 is a protein called mS29.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
22	W	380	3062	1955	535	559	13	0	0

- Molecule 23 is a protein called mS31/mS46.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
23	X	204	1613	1011	262	329	11	0	0

- Molecule 24 is a protein called mS33.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
24	Y	98	793	495	159	137	2	0	0

- Molecule 25 is a protein called mS34.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
25	Z	80	649	422	121	104	2	0	0

- Molecule 26 is a RNA chain called 26S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
26	1	2922	62518	27942	11365	20289	2922	5	0

- Molecule 27 is a RNA chain called 5S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
27	3	118	2513	1124	453	819	117	0	0

- Molecule 28 is a protein called uL2m C-ter.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
28	1B	177	1325	819	259	233	14	0	0

- Molecule 29 is a protein called Large ribosomal subunit protein uL2mz, N-terminal part.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
29	1C	215	1696	1078	316	296	6	0	0

There are 12 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
1C	87	LYS	GLU	conflict	UNP P93311
1C	89	LEU	PHE	conflict	UNP P93311
1C	147	TYR	SER	conflict	UNP P93311
1C	155	SER	GLY	conflict	UNP P93311
1C	190	ASP	GLY	conflict	UNP P93311
1C	195	PRO	ALA	conflict	UNP P93311
1C	199	VAL	ALA	conflict	UNP P93311
1C	200	SER	LYS	conflict	UNP P93311
1C	201	THR	PRO	conflict	UNP P93311
1C	221	TYR	CYS	conflict	UNP P93311
1C	226	TRP	GLY	conflict	UNP P93311
1C	238	ASN	LYS	conflict	UNP P93311

- Molecule 30 is a protein called uL3m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
30	1D	264	2045	1309	367	358	11	0	0

- Molecule 31 is a protein called uL4m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
31	1E	221	1753	1104	334	308	7	0	0

- Molecule 32 is a protein called uL5m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
32	1F	158	1286	829	212	236	9	0	0

- Molecule 33 is a protein called uL6m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
33	1G	98	779	508	136	130	5	0	0

- Molecule 34 is a protein called bL9m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
34	1H	66	539	345	98	94	2	0	0

- Molecule 35 is a protein called uL10m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
35	1I	130	1036	669	178	184	5	0	0

- Molecule 36 is a protein called uL11m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
36	1J	147	1129	722	193	205	9	0	0

- Molecule 37 is a protein called uL13m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
37	1K	189	1526	955	299	265	7	0	0

- Molecule 38 is a protein called uL14m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
38	1L	127	966	609	184	168	5	0	0

- Molecule 39 is a protein called uL15m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
39	1M	210	1649	1052	321	273	3	0	0

- Molecule 40 is a protein called uL16m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
40	1N	148	1160	731	230	192	7	0	0

- Molecule 41 is a protein called bL17m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
41	1O	151	1231	767	244	214	6	0	0

- Molecule 42 is a protein called uL18m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
42	1P	113	878	564	160	149	5	0	0

- Molecule 43 is a protein called bL19m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
43	1Q	122	1008	641	198	166	3	0	0

- Molecule 44 is a protein called bL20m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
44	1R	110	915	572	184	154	5	0	0

- Molecule 45 is a protein called bL21m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
45	1S	145	1170	750	207	211	2	0	0

- Molecule 46 is a protein called uL22m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
46	1T	155	1241	782	249	205	5	0	0

- Molecule 47 is a protein called uL23m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
47	1U	130	1048	675	190	181	2	0	0

- Molecule 48 is a protein called uL24m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
48	1V	158	1223	770	229	220	4	0	0

- Molecule 49 is a protein called bL25-2m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
49	1W	205	1588	1006	284	294	4	0	0

- Molecule 50 is a protein called bL25m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
50	1X	216	1670	1069	298	302	1	0	0

- Molecule 51 is a protein called bL27m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
51	1Y	98	768	484	152	131	1	0	0

- Molecule 52 is a protein called bL28m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
52	1Z	177	1441	911	266	255	9	0	0

- Molecule 53 is a protein called uL29m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
53	1a	110	928	588	172	158	10	0	0

- Molecule 54 is a protein called uL30m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
54	1b	100	803	504	160	134	5	0	0

- Molecule 55 is a protein called bL31m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
55	1c	59	489	313	98	73	5	0	0

- Molecule 56 is a protein called bL32m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
56	1d	49	379	240	80	55	4	0	0

- Molecule 57 is a protein called bL33m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
57	1e	54	459	300	85	72	2	0	0

- Molecule 58 is a protein called bL34m.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
58	1f	44	364	224	88	52	0	0

- Molecule 59 is a protein called bL35m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
59	1g	91	770	496	152	119	3	0	0

- Molecule 60 is a protein called bL36m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
60	1h	38	309	190	65	49	5	0	0

- Molecule 61 is a protein called mL40.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
61	1i	183	1424	885	255	274	10	0	0

- Molecule 62 is a protein called mL41.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
62	1j	71	570	369	102	97	2	0	0

- Molecule 63 is a protein called mL43.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
63	1k	118	952	599	184	165	4	0	0

- Molecule 64 is a protein called mL46.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
64	1l	211	1741	1131	286	316	8	0	0

- Molecule 65 is a protein called mL53.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
65	1m	122	970	610	170	184	6	0	0

- Molecule 66 is a protein called mL54.

Mol	Chain	Residues	Atoms				AltConf	Trace
66	1o	76	Total	C	N	O	0	0
			626	397	114	115		

- Molecule 67 is a protein called mL59/mL64.

Mol	Chain	Residues	Atoms					AltConf	Trace
67	1p	117	Total	C	N	O	S	0	0
			992	626	189	169	8		

- Molecule 68 is a protein called mL60.

Mol	Chain	Residues	Atoms					AltConf	Trace
68	1q	50	Total	C	N	O	S	0	0
			390	243	79	67	1		

- Molecule 69 is a protein called mL80.

Mol	Chain	Residues	Atoms					AltConf	Trace
69	1r	92	Total	C	N	O	S	0	0
			735	469	139	122	5		

- Molecule 70 is a protein called mL87.

Mol	Chain	Residues	Atoms					AltConf	Trace
70	1s	118	Total	C	N	O	S	0	0
			985	617	203	163	2		

- Molecule 71 is a protein called mL101 (rPPR4).

Mol	Chain	Residues	Atoms					AltConf	Trace
71	1t	484	Total	C	N	O	S	0	0
			3856	2433	665	733	25		

- Molecule 72 is a protein called mL102 (rPPR5).

Mol	Chain	Residues	Atoms					AltConf	Trace
72	1u	666	Total	C	N	O	S	0	0
			5264	3316	915	991	42		

- Molecule 73 is a protein called mL104 (rPPR9).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
73	1v	433	3440	2173	599	640	28	0	0

- Molecule 74 is a protein called Nascent peptide.

Mol	Chain	Residues	Atoms				AltConf	Trace
			Total	C	N	O		
74	1x	4	19	11	4	4	0	0

- Molecule 75 is a RNA chain called tRNA.

Mol	Chain	Residues	Atoms						AltConf	Trace
			Total	C	N	O	P	S		
75	5	76	1625	725	294	529	76	1	0	0

- Molecule 76 is a RNA chain called 18S rRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
76	2	1591	34081	15222	6213	11055	1591	0	0

- Molecule 77 is a RNA chain called mRNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
77	6	6	130	59	27	38	6	0	0

- Molecule 78 is a protein called mS35.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
78	a	315	2487	1547	448	482	10	0	0

- Molecule 79 is a protein called mS37.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
79	b	77	610	378	116	108	8	0	0

- Molecule 80 is a protein called mS38.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
80	c	26	232	145	54	32	1	0	0

- Molecule 81 is a protein called mS41.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
81	d	78	616	403	110	102	1	0	0

- Molecule 82 is a protein called mS45.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
82	e	246	2074	1310	374	380	10	0	0

- Molecule 83 is a protein called mS47.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
83	f	377	2922	1843	486	573	20	0	0

- Molecule 84 is a protein called mS83 (rPPR10).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
84	h	310	2460	1551	436	458	15	0	0

- Molecule 85 is a protein called mS77 (NFD5).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
85	i	306	2487	1567	419	487	14	0	0

- Molecule 86 is a protein called mS76 (rPPR1).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
86	j	381	2984	1885	510	567	22	0	0

- Molecule 87 is a protein called mS86.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
87	k	47	314	194	61	55	4	0	0

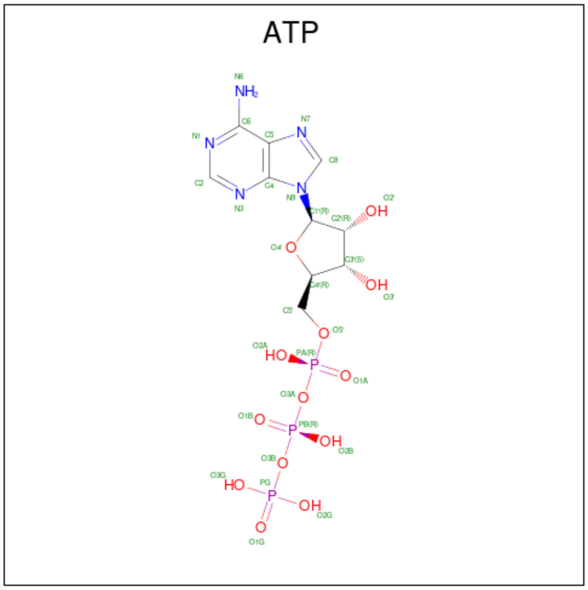
- Molecule 88 is a protein called uS2m.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
88	A	204	1611	1032	284	285	10	0	0

- Molecule 89 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

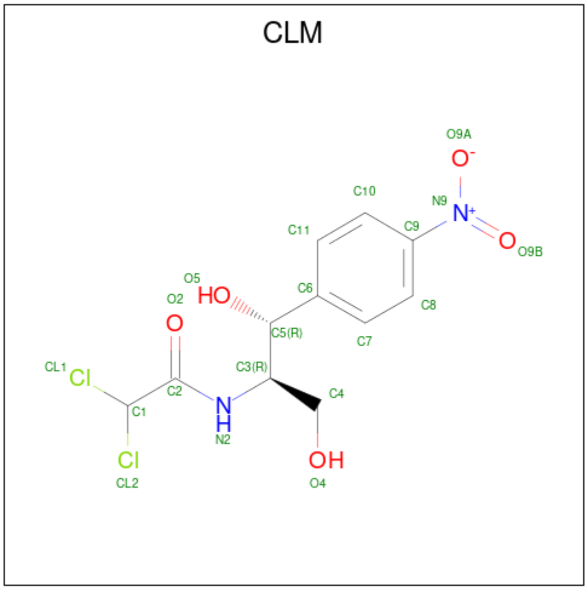
Mol	Chain	Residues	Atoms		AltConf
			Total	Mg	
89	T	1	1	1	0
89	W	1	1	1	0
89	1	249	249	249	0
89	3	3	3	3	0
89	1D	1	1	1	0
89	1h	1	1	1	0
89	1j	1	1	1	0
89	1q	2	2	2	0
89	2	98	98	98	0

- Molecule 90 is ADENOSINE-5'-TRIPHOSPHATE (CCD ID: ATP) (formula: $C_{10}H_{16}N_5O_{13}P_3$).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	N	O	P	
90	W	1	31	10	5	13	3	0

- Molecule 91 is CHLORAMPHENICOL (CCD ID: CLM) (formula: $C_{11}H_{12}Cl_2N_2O_5$).



Mol	Chain	Residues	Atoms					AltConf
			Total	C	Cl	N	O	
91	1	1	20	11	2	2	5	0

- Molecule 92 is POTASSIUM ION (CCD ID: K) (formula: K).

Mol	Chain	Residues	Atoms	AltConf
92	1	56	Total K 56 56	0
92	1B	3	Total K 3 3	0
92	1E	1	Total K 1 1	0
92	2	14	Total K 14 14	0

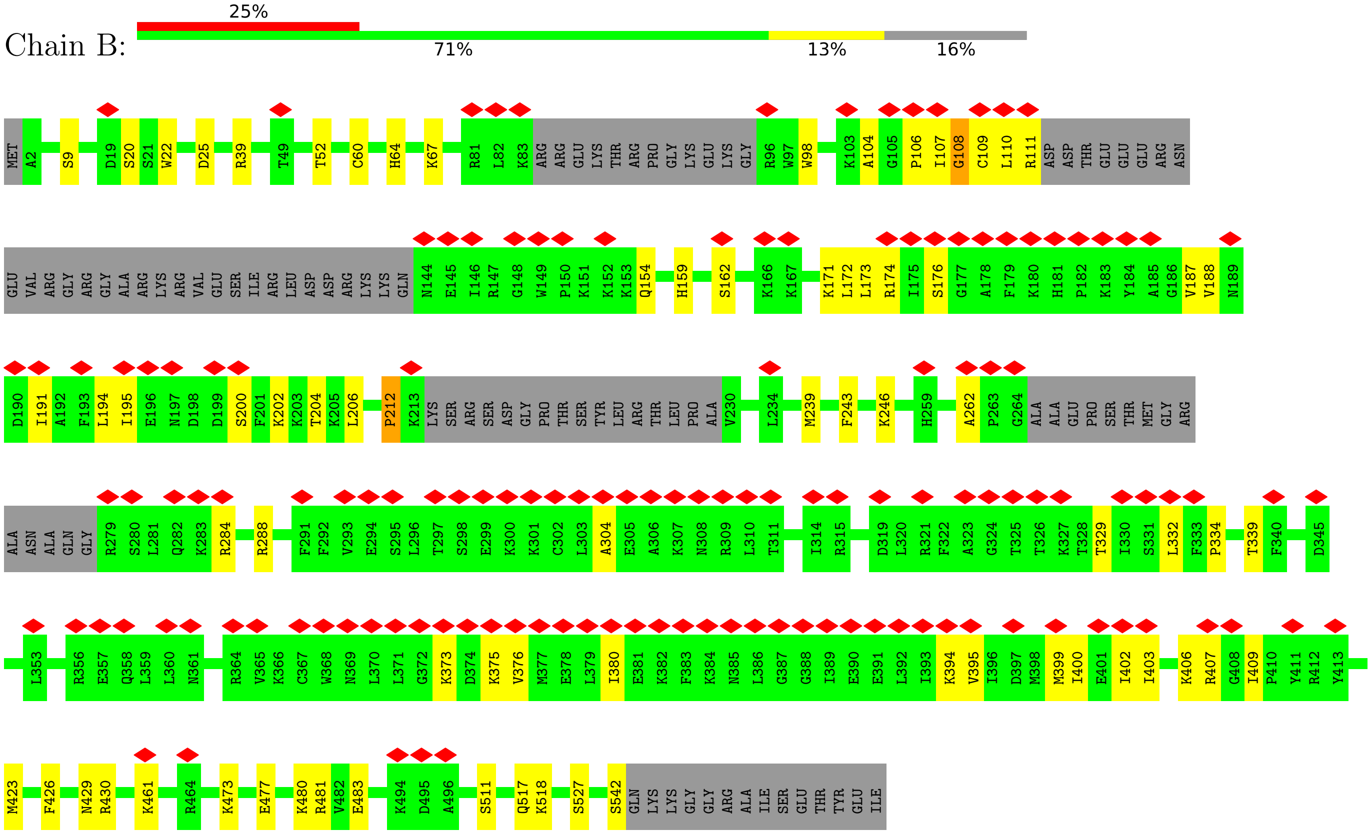
- Molecule 93 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	AltConf
93	1d	1	Total Zn 1 1	0
93	1h	1	Total Zn 1 1	0

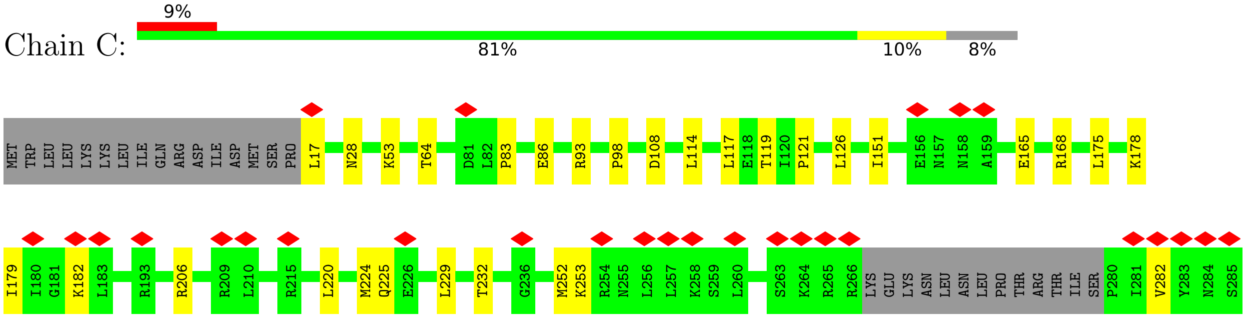
3 Residue-property plots ⓘ

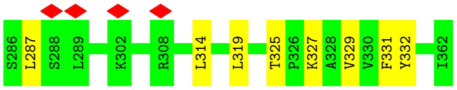
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion in map density. Residues are color-coded according to the number of geometric quality criteria for which they contain at least one outlier: green = 0, yellow = 1, orange = 2 and red = 3 or more. A red diamond above a residue indicates a poor fit to the EM map for this residue (all-atom inclusion < 40%). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

- Molecule 1: Small ribosomal subunit protein uS3m



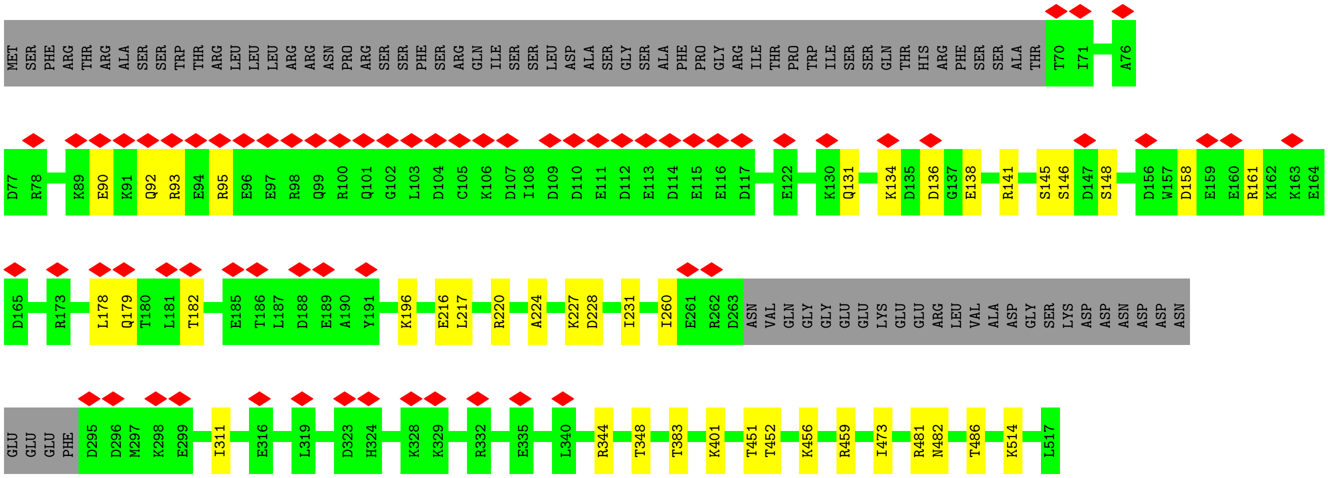
- Molecule 2: uS4m





- Molecule 3: uS5m

Chain D:

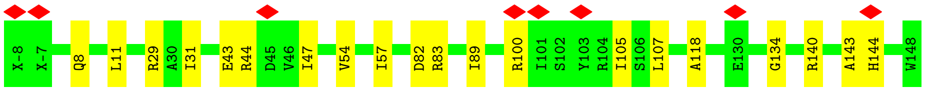


- Molecule 4: bS6m

Chain E:

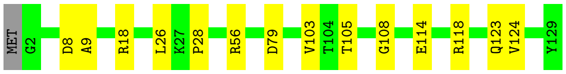
- Molecule 5: uS7m,Small ribosomal subunit protein uS7m

Chain F:



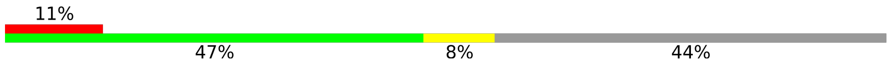
- Molecule 6: uS8m

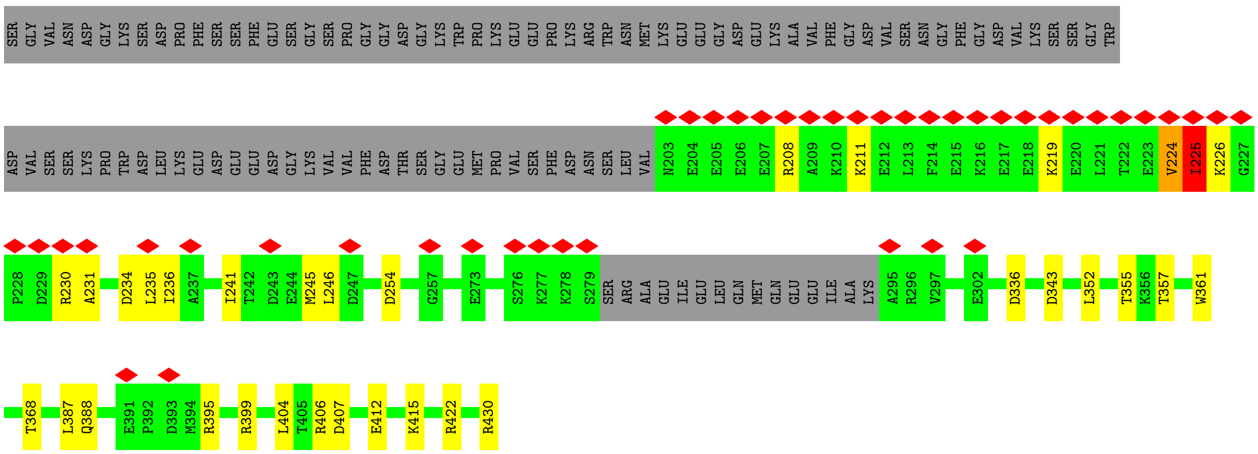
Chain G:



- Molecule 7: uS9m

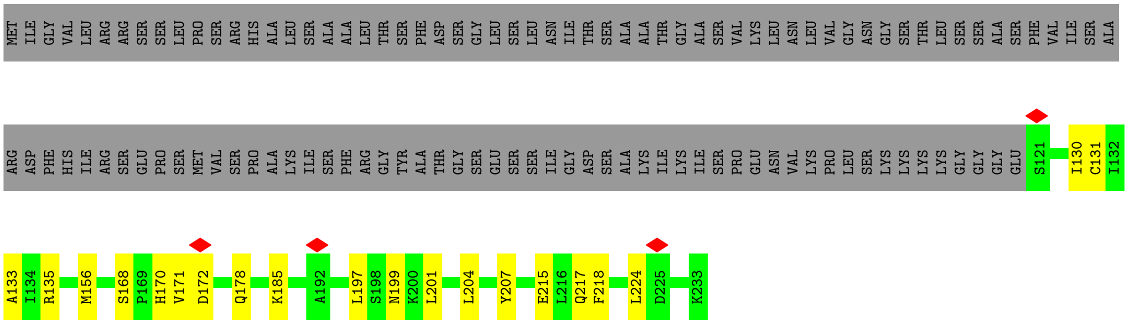
Chain H:





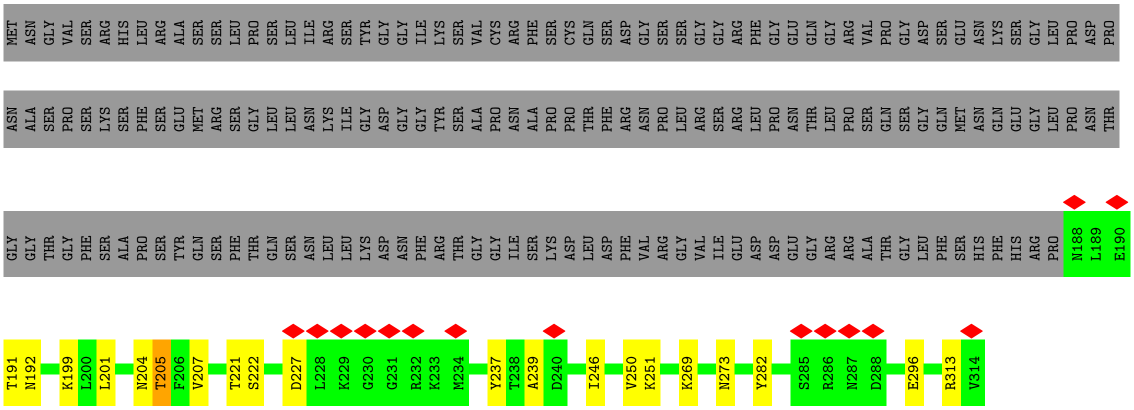
- Molecule 8: uS10m

Chain I:



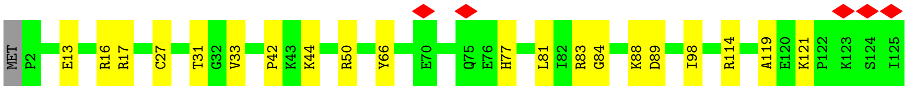
- Molecule 9: uS11m

Chain J:

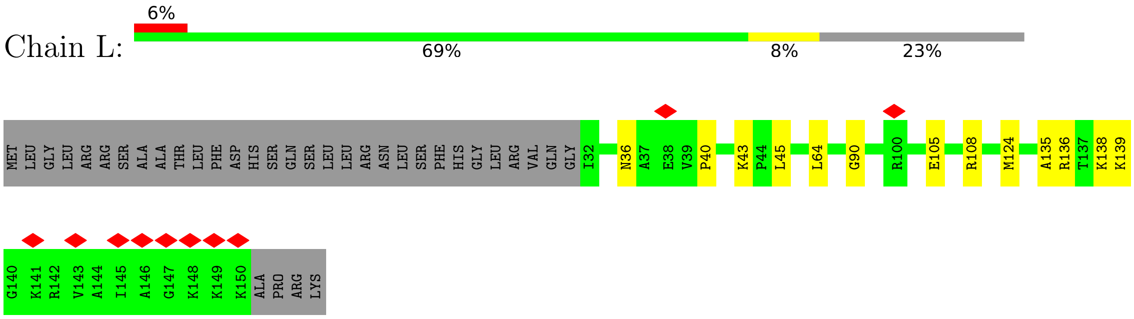


- Molecule 10: uS12m

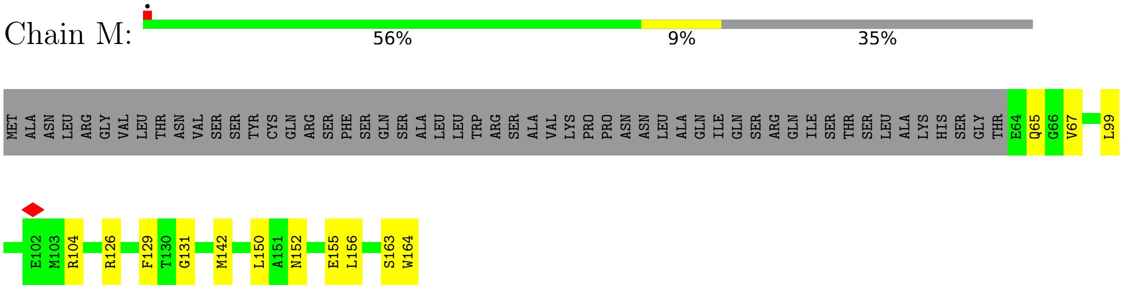
Chain K:



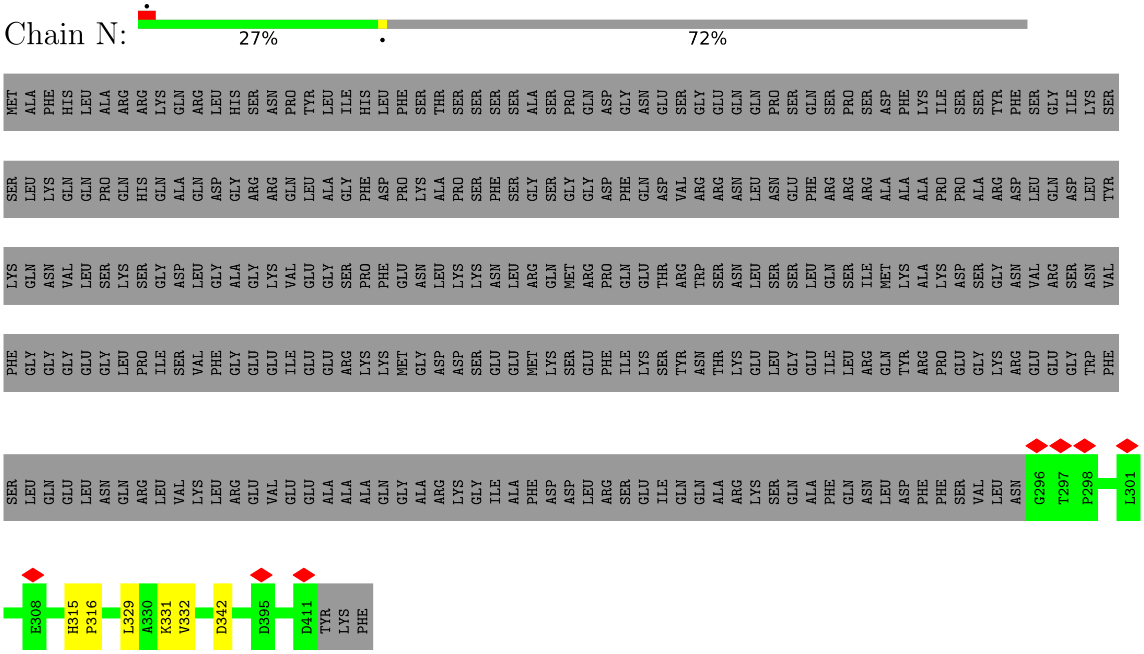
- Molecule 11: uS13m



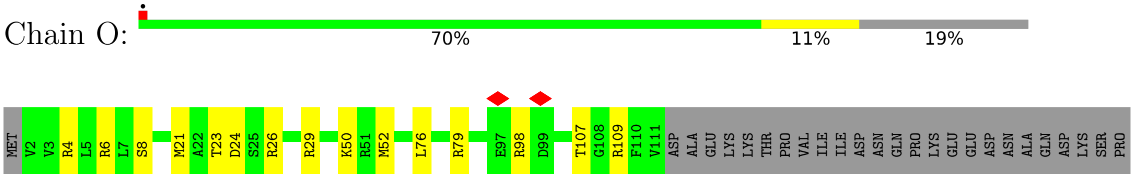
- Molecule 12: uS14m



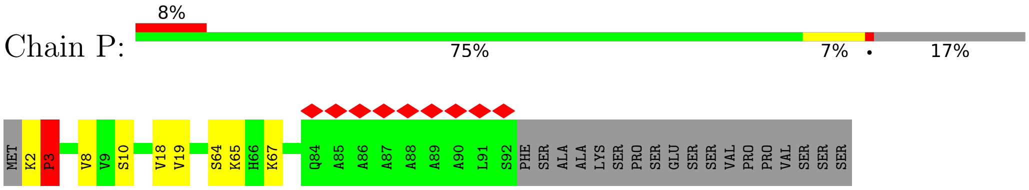
- Molecule 13: uS15m



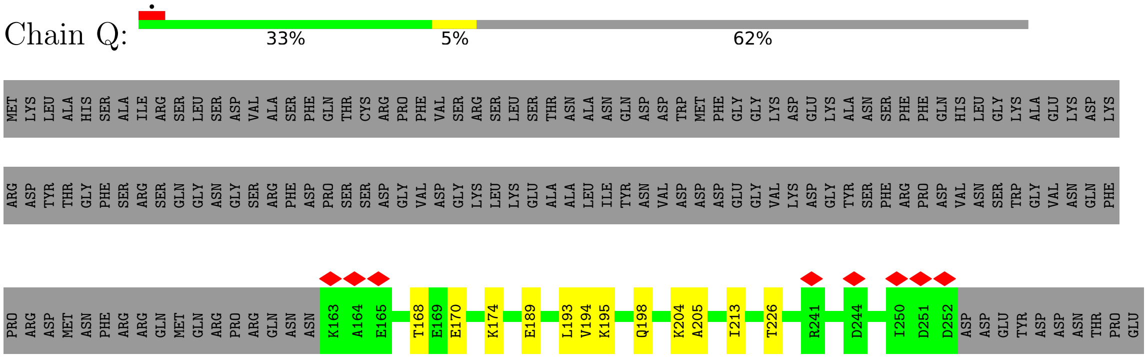
- Molecule 14: bS16m



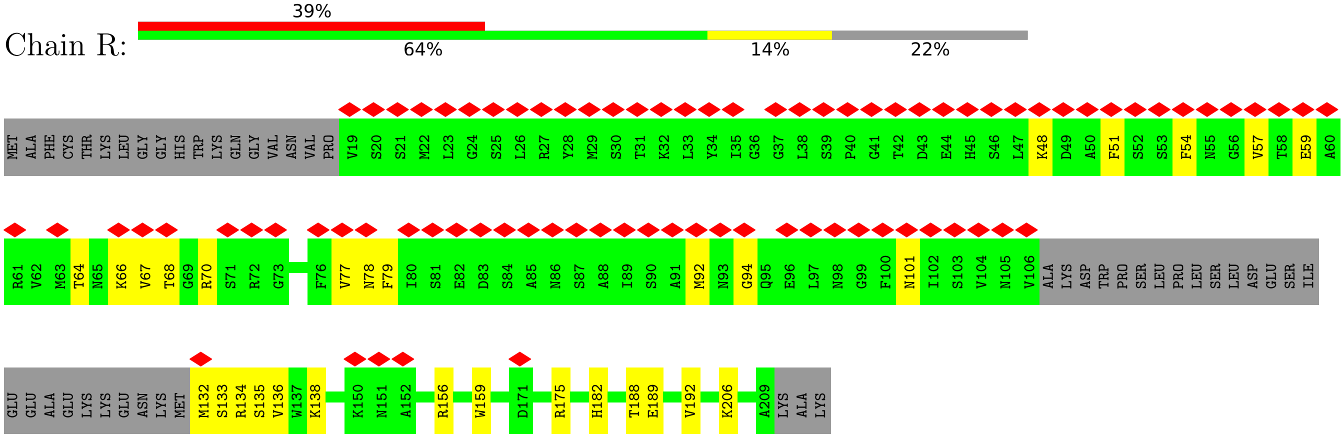
- Molecule 15: uS17m



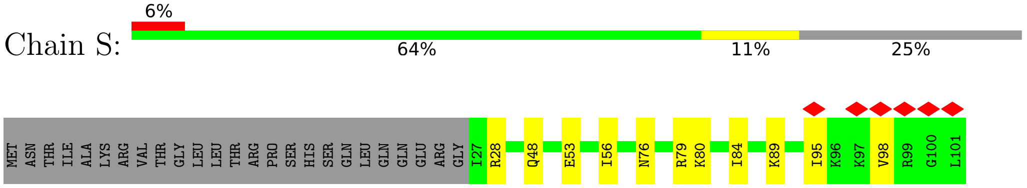
• Molecule 16: bS18m



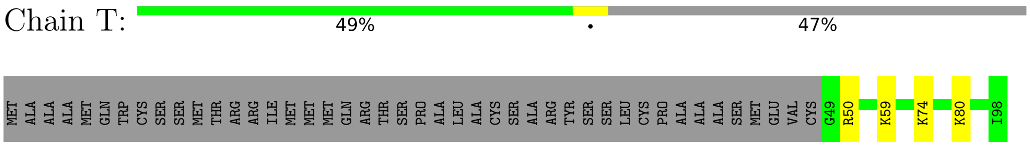
• Molecule 17: uS19m



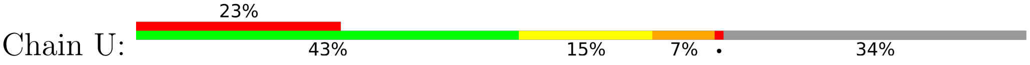
• Molecule 18: bS21m

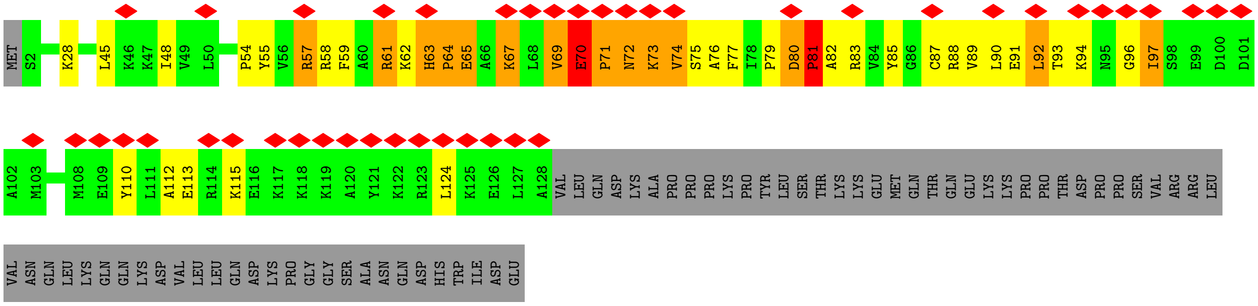


• Molecule 19: bTHXm

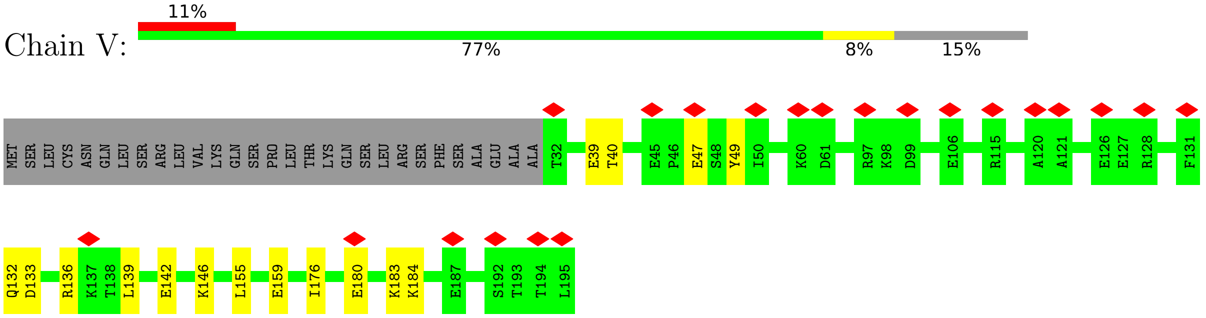


• Molecule 20: mS23

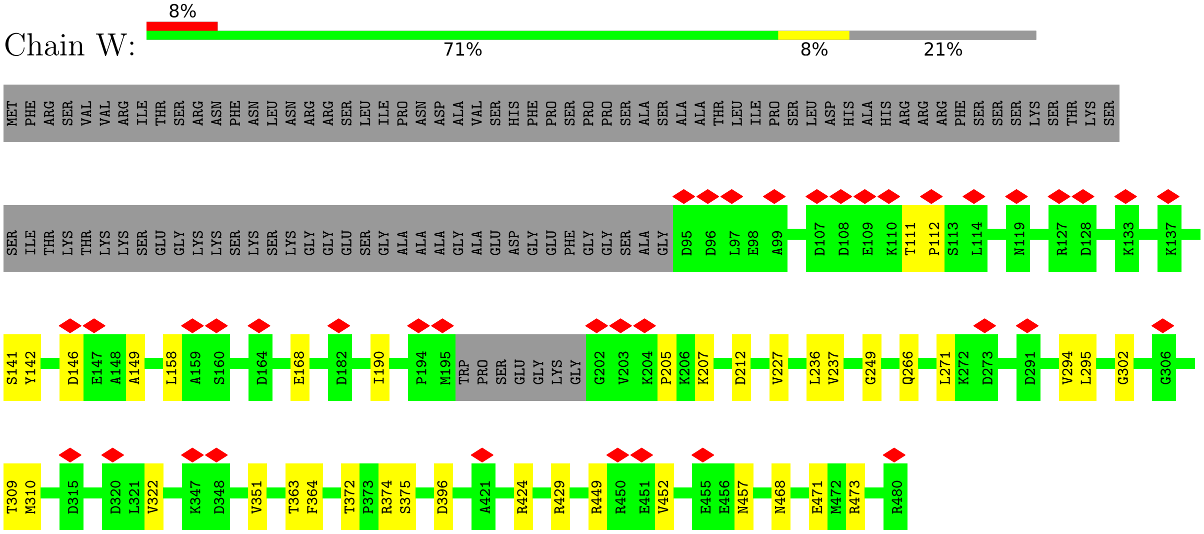




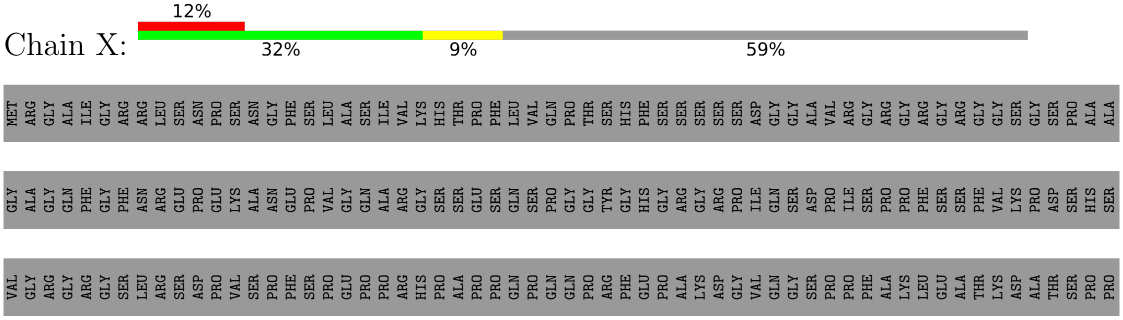
- Molecule 21: mS26

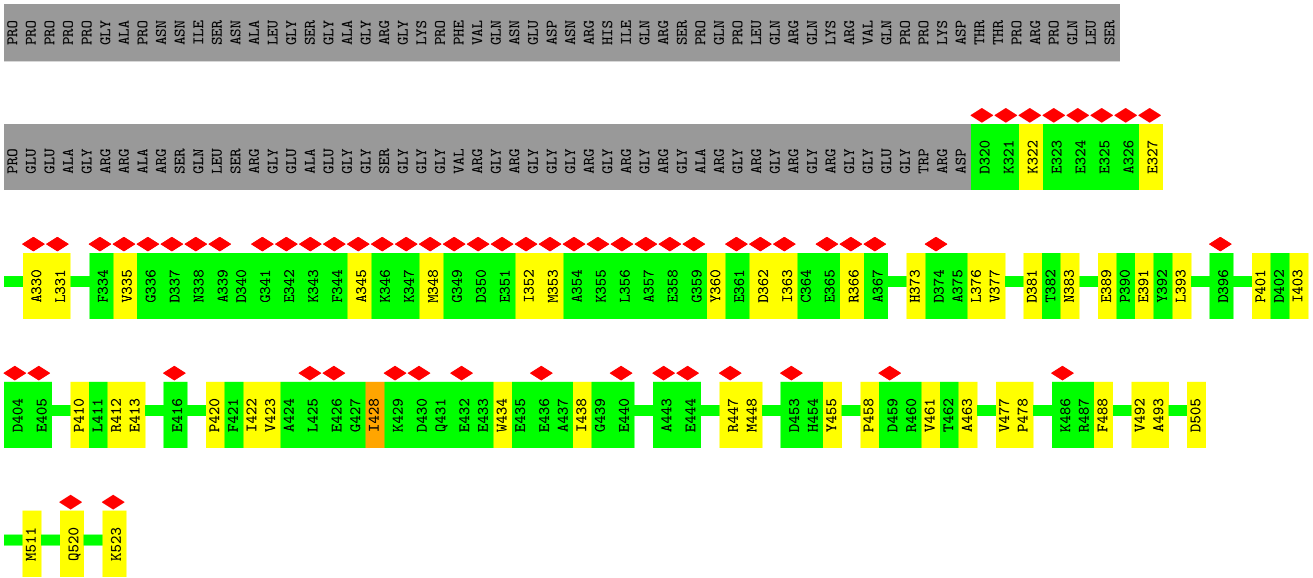


- Molecule 22: mS29



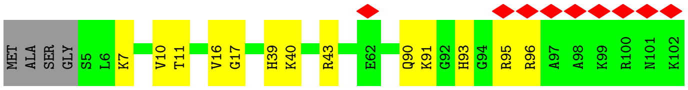
- Molecule 23: mS31/mS46





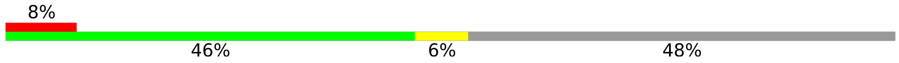
- Molecule 24: mS33

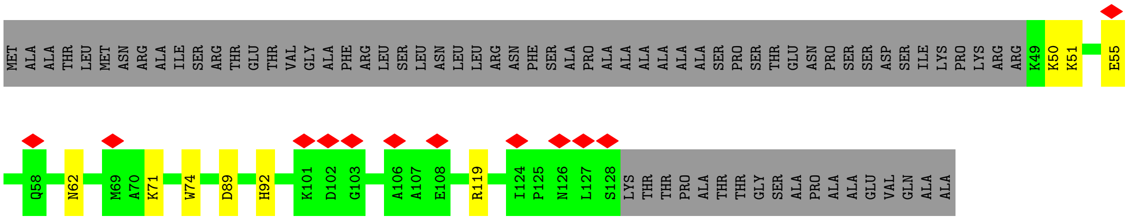
Chain Y:



- Molecule 25: mS34

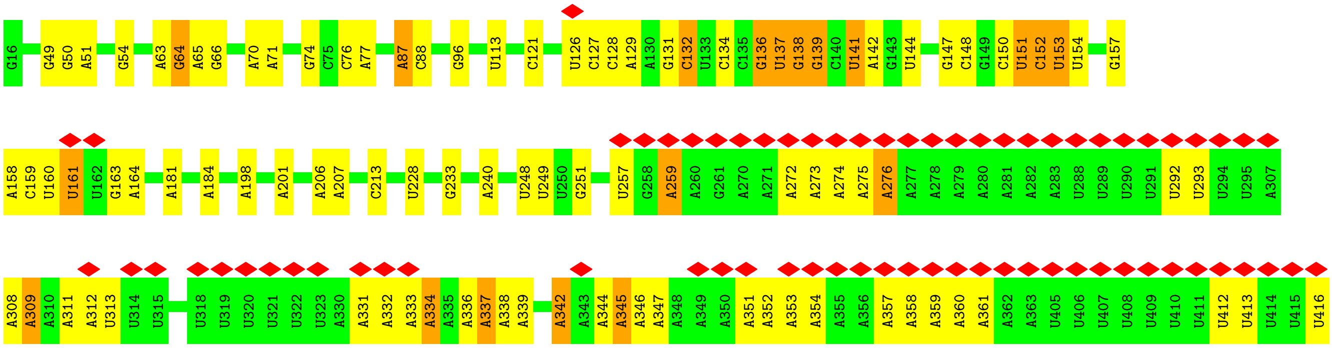
Chain Z:

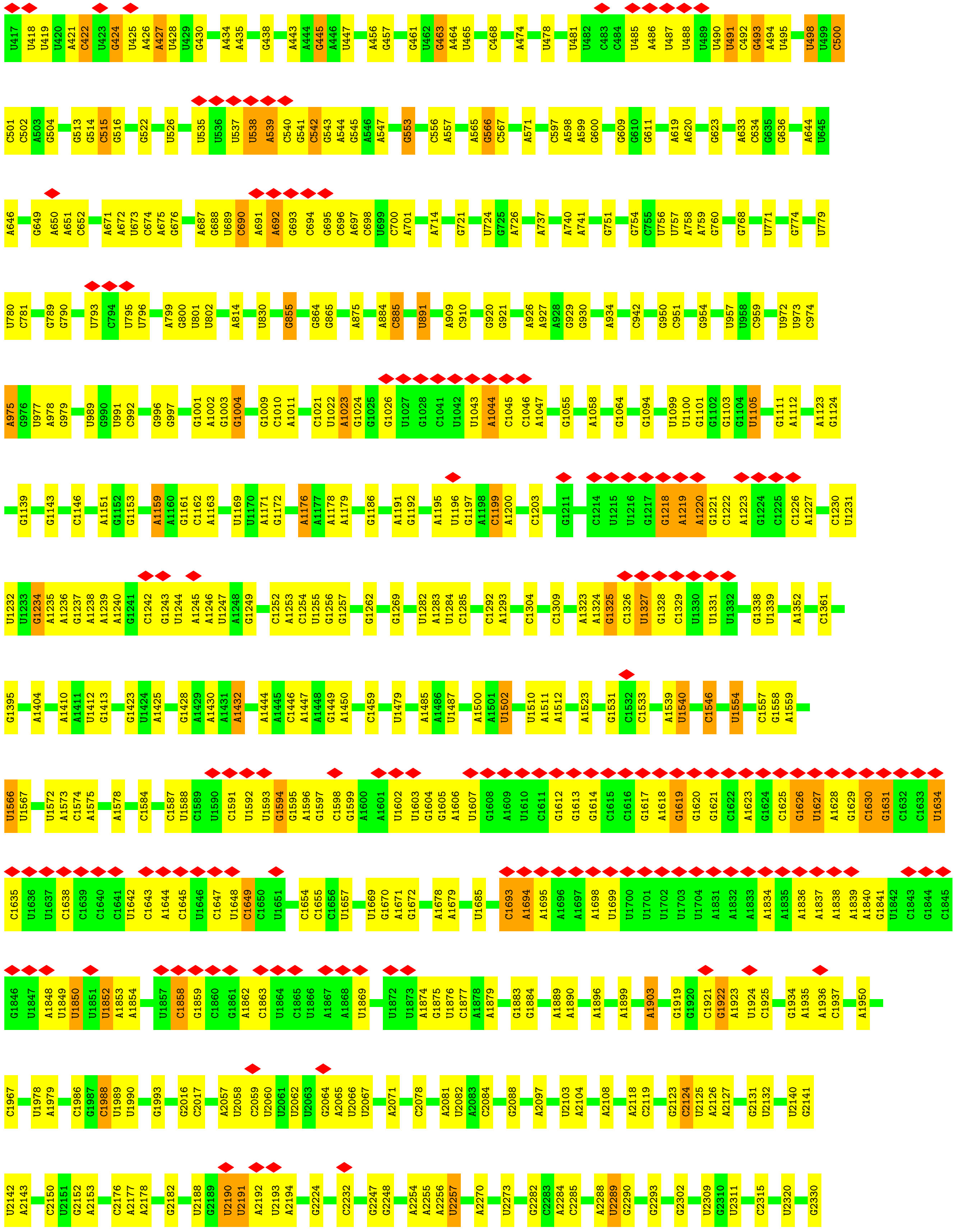


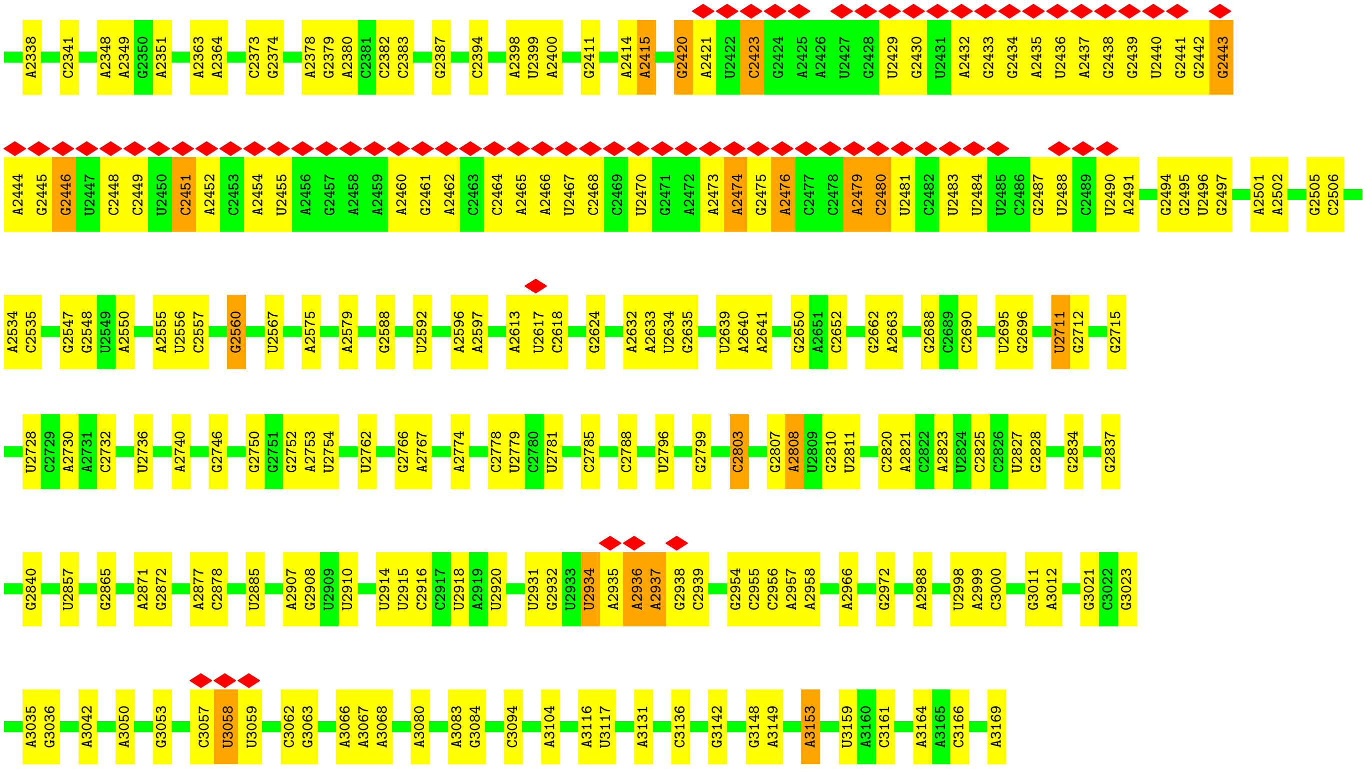


- Molecule 26: 26S rRNA

Chain 1:

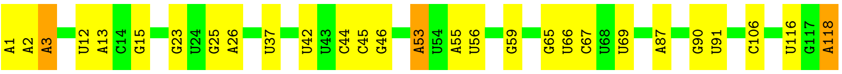



U417 U418 U419 U420 A421 C422 U423 G424 U425 A426 A427 U428 U429 G430 A434 A435 G438 A443 A444 G445 A446 U447 A456 G457 G461 U462 G463 A464 U465 C468 A474 U478 U481 U482 C483 C484 U485 A486 U487 U488 U489 U490 U491 C492 G493 A494 U495 U498 U499 C500
C501 C502 A503 G504 G513 G514 C515 G516 G522 U526 U535 U536 U537 U538 A539 C540 G541 C542 G543 A544 G545 A546 A547 G553 C556 A557 A565 G566 C567 A571 C597 A598 A599 G600 G609 G610 G611 A619 A620 G623 A633 C634 G635 G636 A644 U645
A646 G649 A650 A651 C652 A671 A672 U673 C674 A675 G676 A687 G688 U689 C690 A691 A692 G693 C694 G695 C696 A697 C698 U699 C700 A701 A714 G721 U724 G725 A726 A737 A740 A741 G751 G754 C755 U756 U757 A758 A759 G760 G768 U771 G774 U779
U780 C781 G789 G790 U793 C794 U795 U796 A799 G800 U801 U802 A814 U830 G855 G864 G865 A875 A884 C885 U891 A909 C910 G920 G921 A926 A927 A928 G929 G930 A934 C942 G950 C951 G954 U957 U958 C959 U972 U973 C974
A975 G976 U977 A978 G979 U989 G990 U991 C992 G996 G997 G1001 A1002 G1003 G1004 G1009 C1010 A1011 C1021 U1022 A1023 G1024 G1025 G1026 U1027 G1028 C1041 U1042 U1043 A1044 C1045 C1046 A1047 G1055 A1058 G1064 G1094 U1099 U1100 G1101 G1102 G1103 G1104 U1105 G1111 A1112 A1123 G1124
G1139 G1143 C1146 A1151 G1152 G1153 A1159 A1160 G1161 C1162 A1163 U1169 U1170 A1171 G1172 A1176 A1177 A1178 A1179 G1186 A1191 G1192 A1195 U1196 G1197 A1198 C1199 A1200 C1203 G1211 C1214 U1215 U1216 G1217 G1218 A1219 A1220 G1221 C1222 A1223 G1224 C1225 C1226 A1227 C1230 U1231
U1232 U1233 G1234 A1235 A1236 G1237 A1238 A1239 A1240 G1241 C1242 G1243 U1244 A1245 A1246 U1247 A1248 G1249 C1252 A1253 C1254 U1255 G1256 G1257 G1262 G1269 U1282 A1283 U1284 C1285 C1292 A1293 C1304 C1309 A1323 A1324 G1325 C1326 U1327 G1328 C1329 U1330 U1331 U1332 G1338 U1339 A1352 C1361
G1395 A1404 A1410 A1411 U1412 G1413 G1423 U1424 A1425 G1428 A1429 A1430 A1431 A1432 A1444 A1445 C1446 A1447 A1448 G1449 A1450 C1459 U1479 A1485 A1486 U1487 A1500 A1501 U1502 U1510 A1511 A1512 A1523 G1531 C1532 C1533 A1539 U1540 C1546 U1554 C1557 G1558 A1559
U1566 U1567 U1572 A1573 C1574 A1575 A1578 C1584 C1587 U1588 C1589 U1590 C1591 U1592 U1593 G1594 G1595 A1596 G1597 C1598 G1599 A1600 A1601 U1602 U1603 G1604 G1605 A1606 U1607 G1608 A1609 U1610 C1611 G1612 G1613 G1614 C1615 C1616 G1617 A1618 G1619 G1620 G1621 C1622 A1623 G1624 C1625 G1626 U1627 A1628 G1629 C1630 G1631 C1632 C1633 U1634
C1635 U1636 U1637 C1638 C1639 C1640 C1641 U1642 C1643 A1644 C1645 U1646 C1647 U1648 C1649 C1650 U1651 C1654 C1655 C1656 U1657 U1669 G1670 A1671 G1672 A1678 A1679 U1685 C1693 A1694 A1695 A1696 A1697 A1698 U1699 U1700 U1701 U1702 U1703 U1704 A1831 A1832 A1833 A1834 A1835 A1836 A1837 A1838 A1839 A1840 G1841 U1842 C1843 G1844 C1845
G1846 U1847 A1848 U1849 U1850 U1851 U1852 A1853 A1854 U1857 C1858 G1859 C1860 G1861 A1862 C1863 U1864 C1865 U1866 A1867 A1868 U1869 U1872 U1873 A1874 G1875 U1876 C1877 A1878 A1879 G1883 G1884 A1889 A1890 A1896 A1899 A1903 G1919 G1920 C1921 G1922 A1923 U1924 C1925 G1934 A1935 A1936 C1937 A1950
C1967 U1978 A1979 C1986 G1987 C1988 U1989 U1990 G1993 G2016 C2017 A2057 U2058 C2059 U2060 U2061 U2062 U2063 G2064 A2065 U2066 U2067 A2071 C2078 A2081 U2082 A2083 C2084 G2088 A2097 U2103 A2104 A2108 A2118 C2119 G2123 C2124 U2125 A2126 A2127 G2131 U2132 U2140 G2141
U2142 A2143 C2150 U2151 G2152 A2153 C2176 A2177 A2178 G2182 U2188 G2189 U2190 U2191 A2192 U2193 A2194 G2224 C2232 G2247 G2248 A2254 A2255 A2256 U2257 A2270 U2273 G2282 C2283 A2284 C2285 A2288 U2289 G2290 G2293 G2302 U2309 G2310 U2311 C2315 U2320 G2330



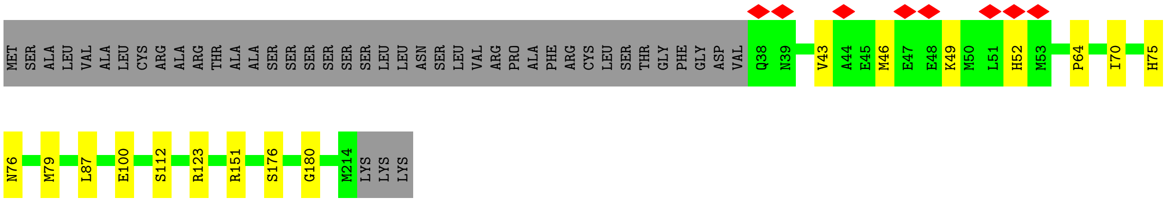
- Molecule 27: 5S rRNA

Chain 3:



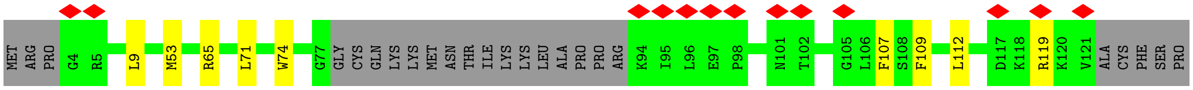
- Molecule 28: uL2m C-ter

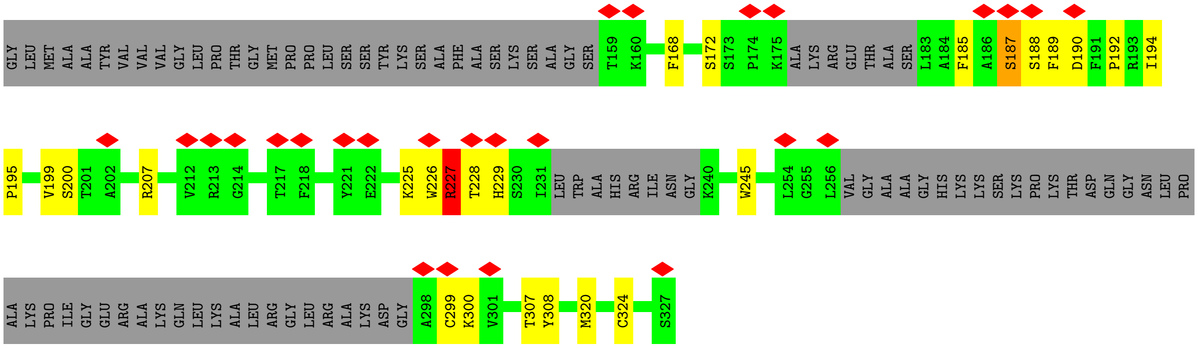
Chain 1B:



- Molecule 29: Large ribosomal subunit protein uL2mz, N-terminal part

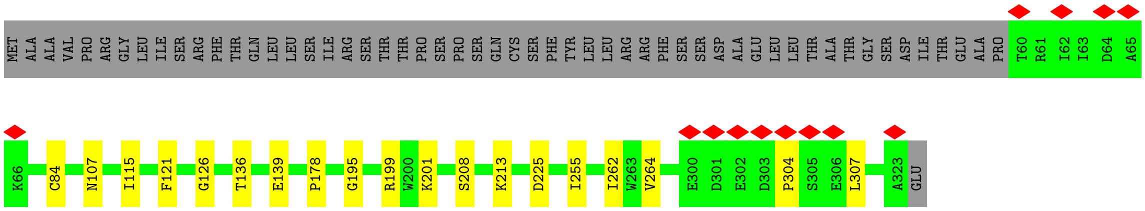
Chain 1C:





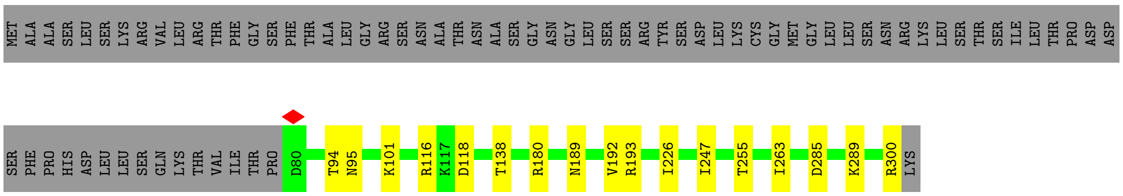
- Molecule 30: uL3m

Chain 1D:



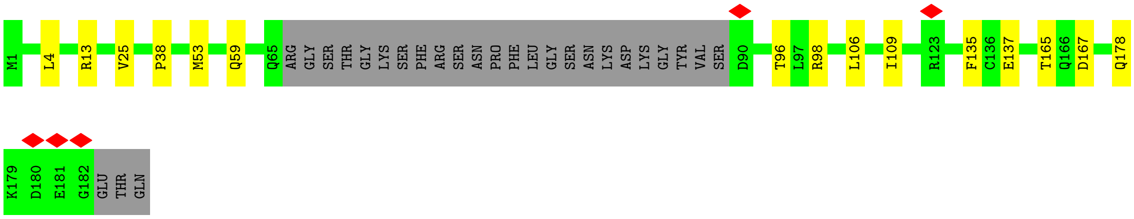
- Molecule 31: uL4m

Chain 1E:



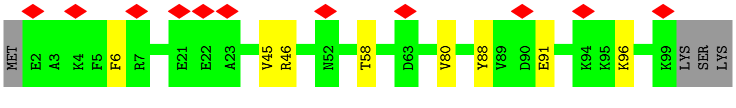
- Molecule 32: uL5m

Chain 1F:



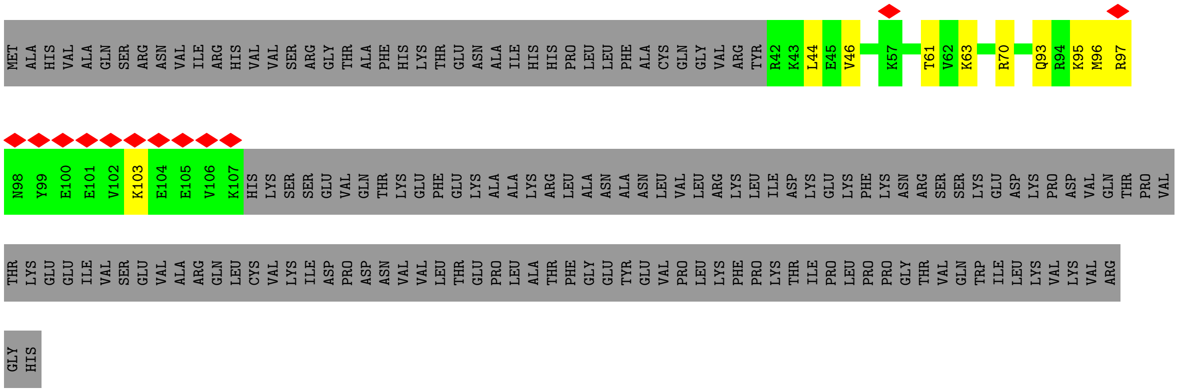
- Molecule 33: uL6m

Chain 1G:



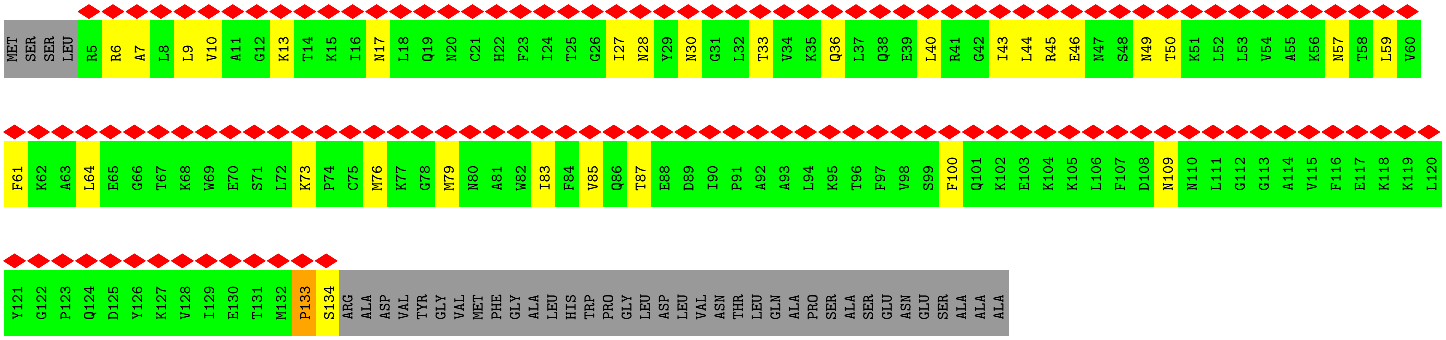
- Molecule 34: bL9m

Chain 1H:



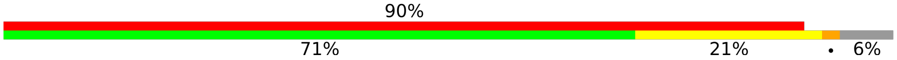
- Molecule 35: uL10m

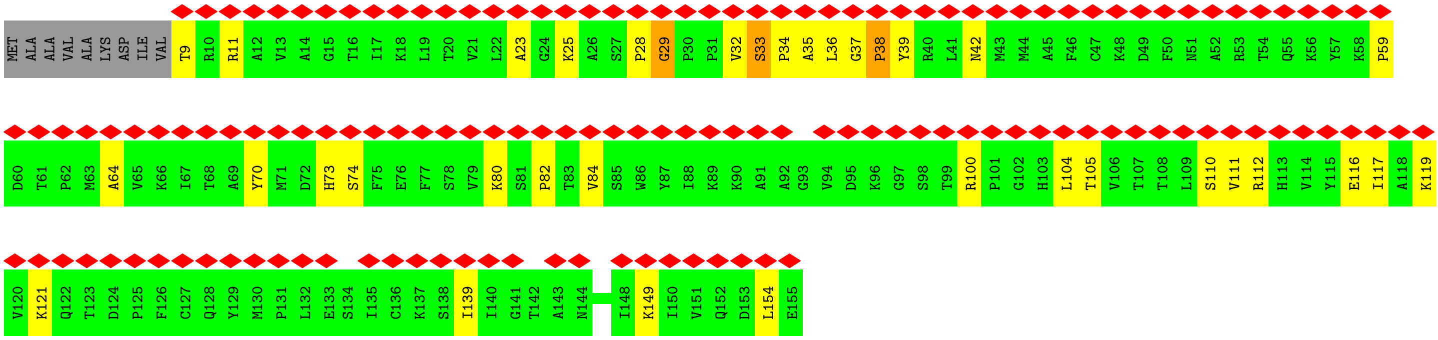
Chain 1I:



- Molecule 36: uL11m

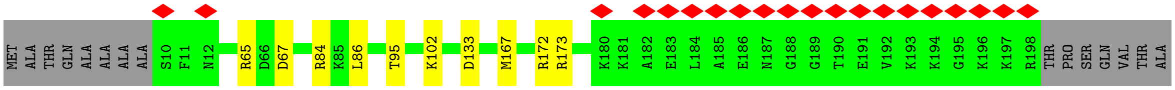
Chain 1J:





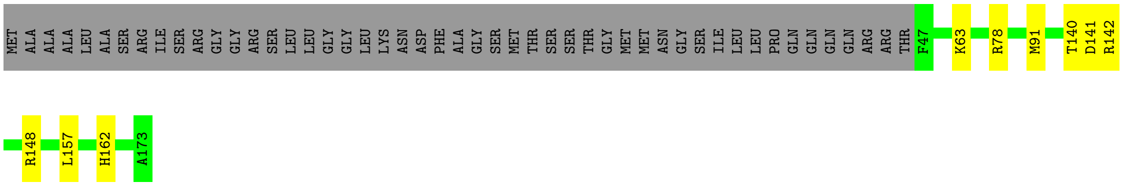
- Molecule 37: uL13m

Chain 1K:



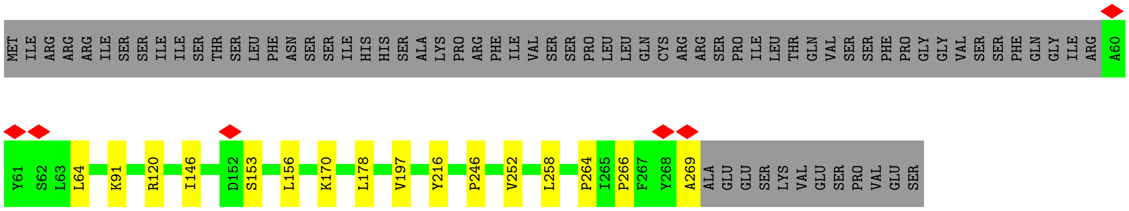
- Molecule 38: uL14m

Chain 1L:



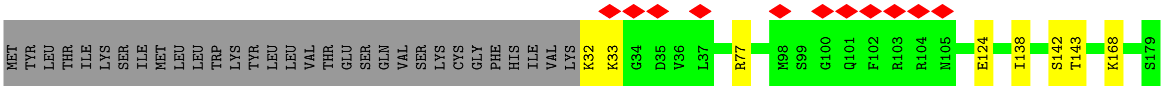
- Molecule 39: uL15m

Chain 1M:



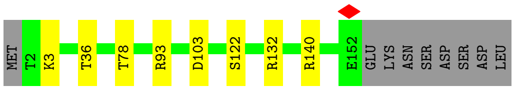
- Molecule 40: uL16m

Chain 1N:



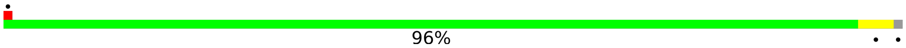
- Molecule 41: bL17m

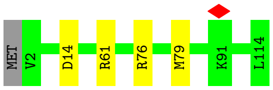
Chain 1O:



- Molecule 42: uL18m

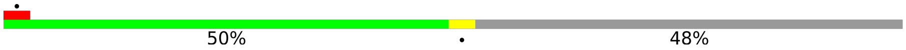
Chain 1P:

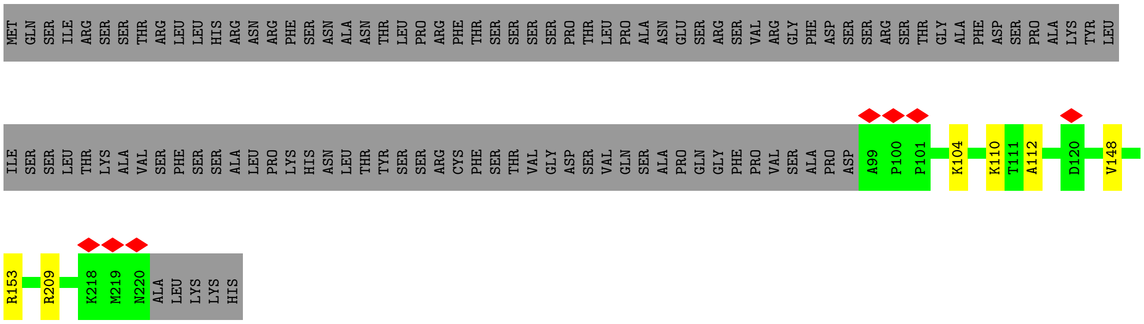




- Molecule 43: bL19m

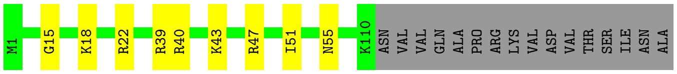
Chain 1Q:





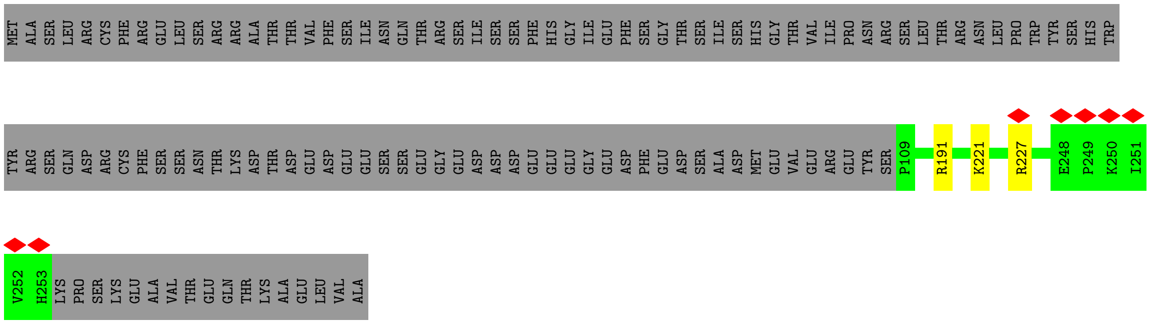
- Molecule 44: bL20m

Chain 1R:



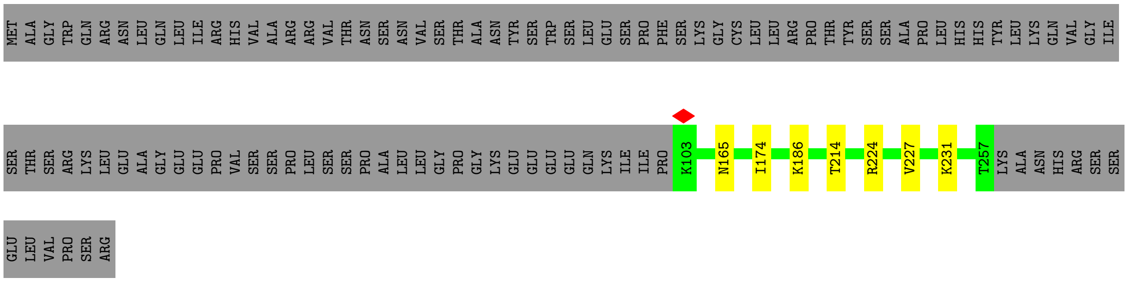
- Molecule 45: bL21m

Chain 1S:



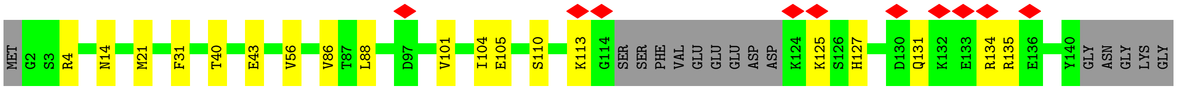
- Molecule 46: uL22m

Chain 1T:



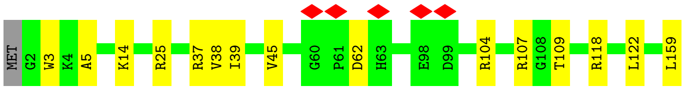
- Molecule 47: uL23m

Chain 1U:



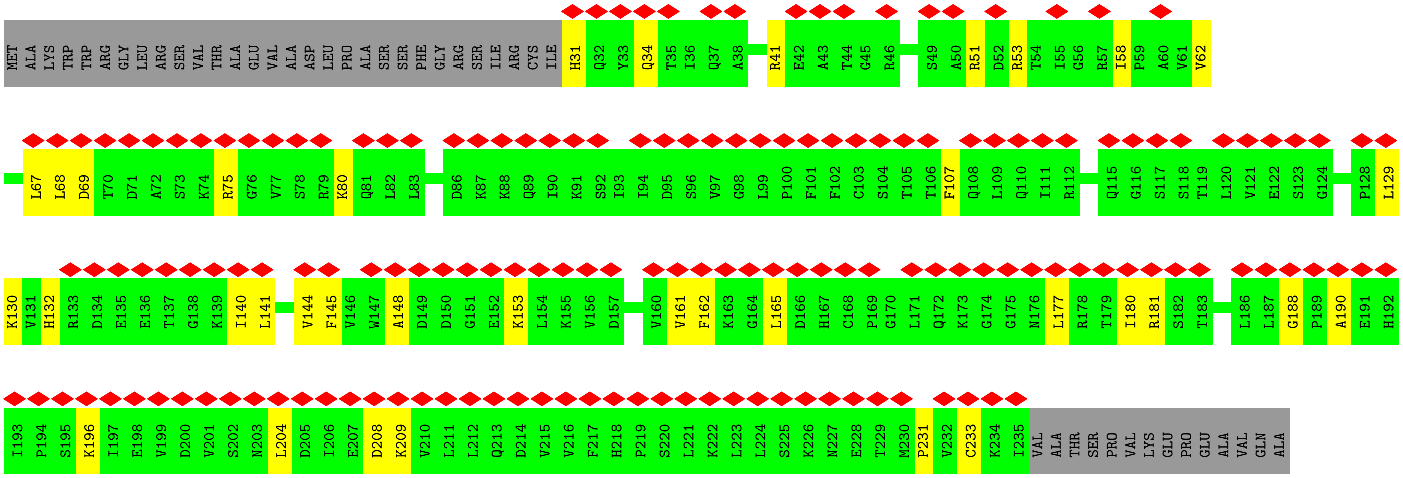
- Molecule 48: uL24m

Chain 1V:



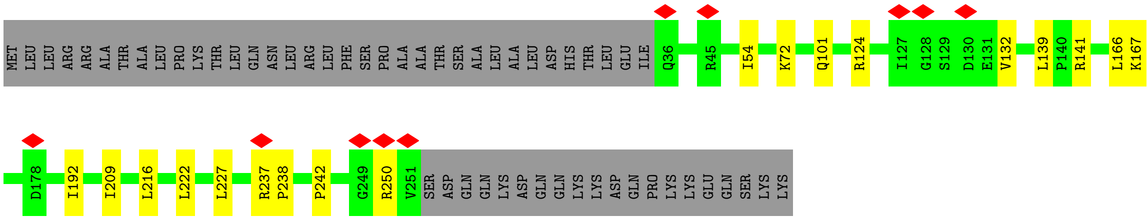
- Molecule 49: bL25-2m

Chain 1W:



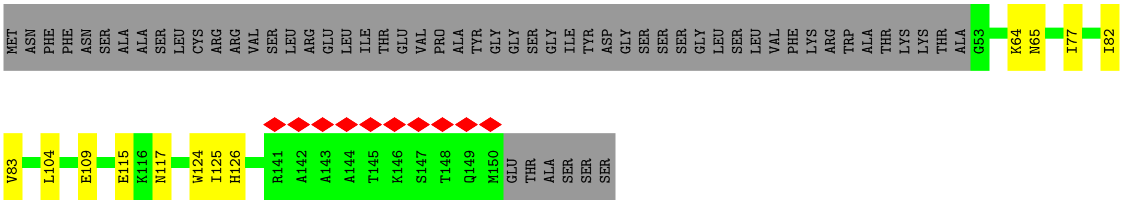
- Molecule 50: bL25m

Chain 1X:

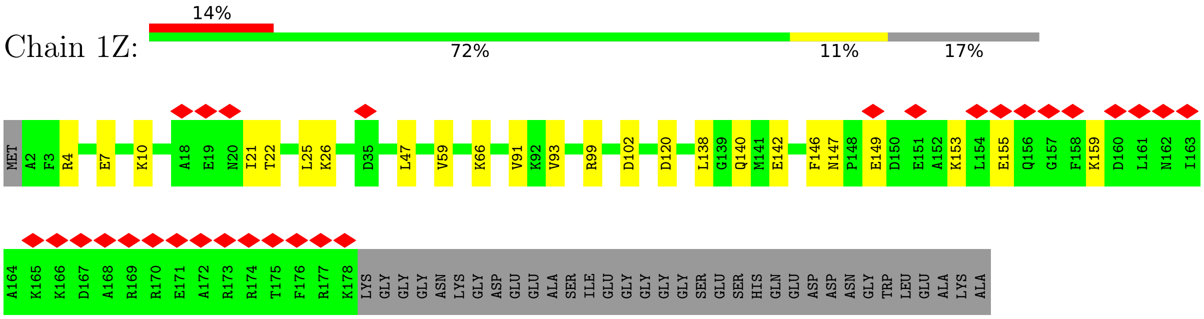


- Molecule 51: bL27m

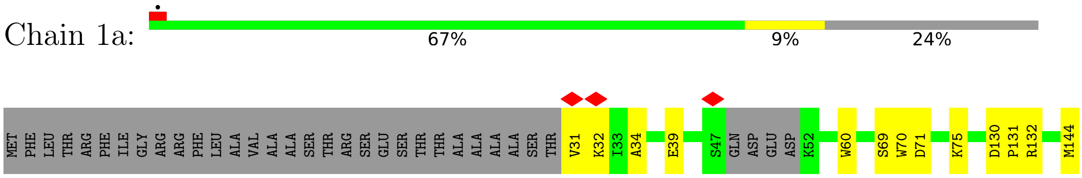
Chain 1Y:



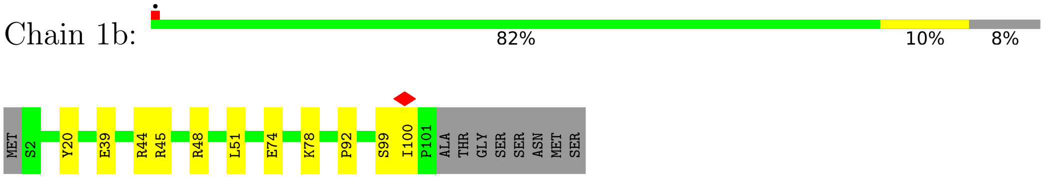
- Molecule 52: bL28m



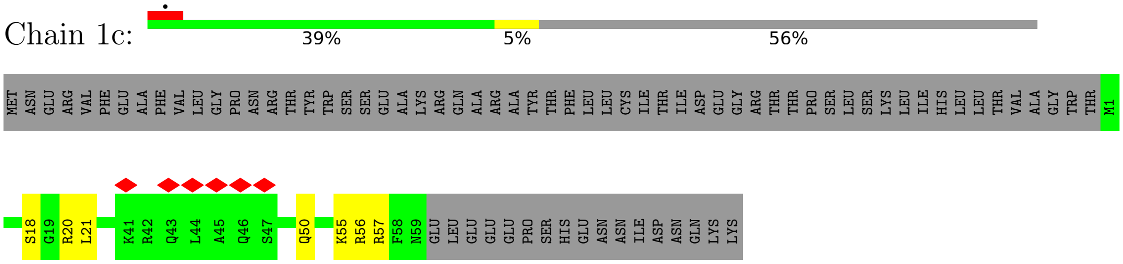
- Molecule 53: uL29m



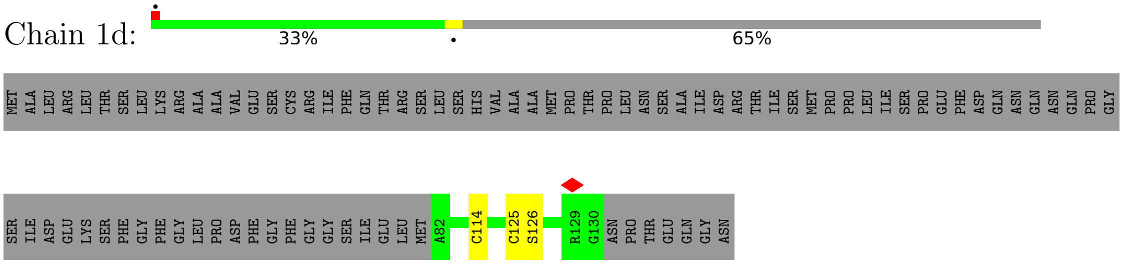
- Molecule 54: uL30m



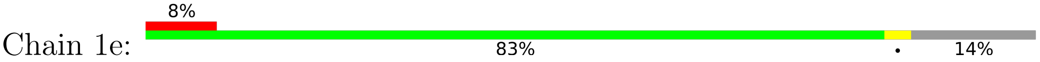
- Molecule 55: bL31m

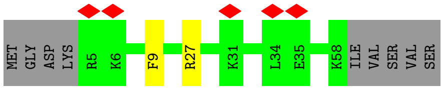


- Molecule 56: bL32m



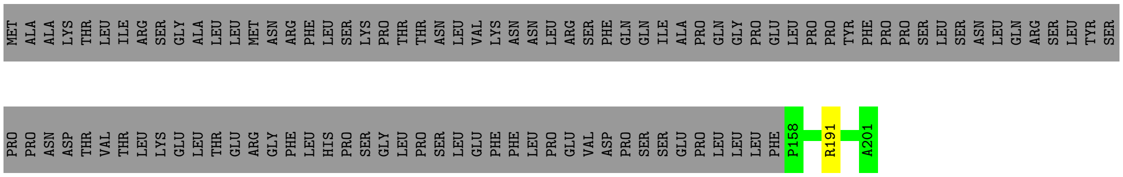
- Molecule 57: bL33m





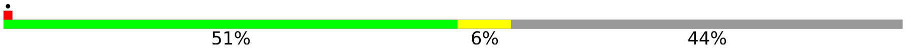
- Molecule 58: bL34m

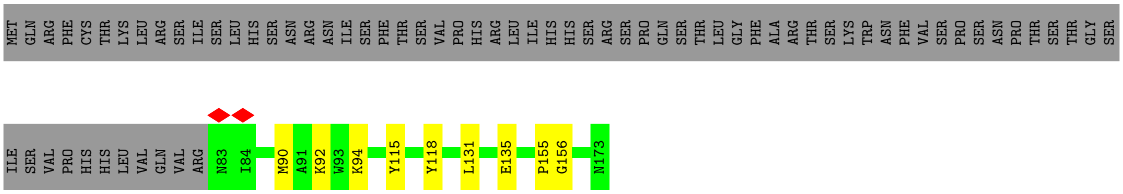
Chain 1f:



- Molecule 59: bL35m

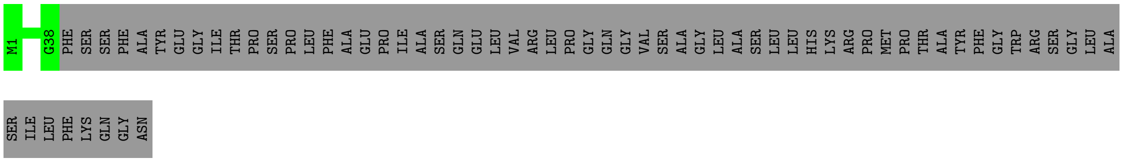
Chain 1g:





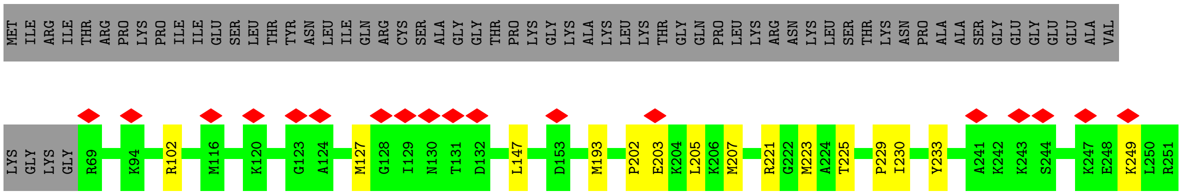
- Molecule 60: bL36m

Chain 1h:



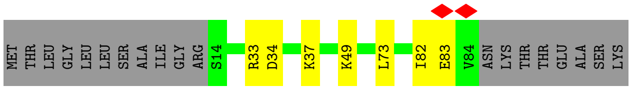
- Molecule 61: mL40

Chain 1i:



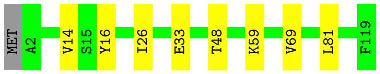
- Molecule 62: mL41

Chain 1j:



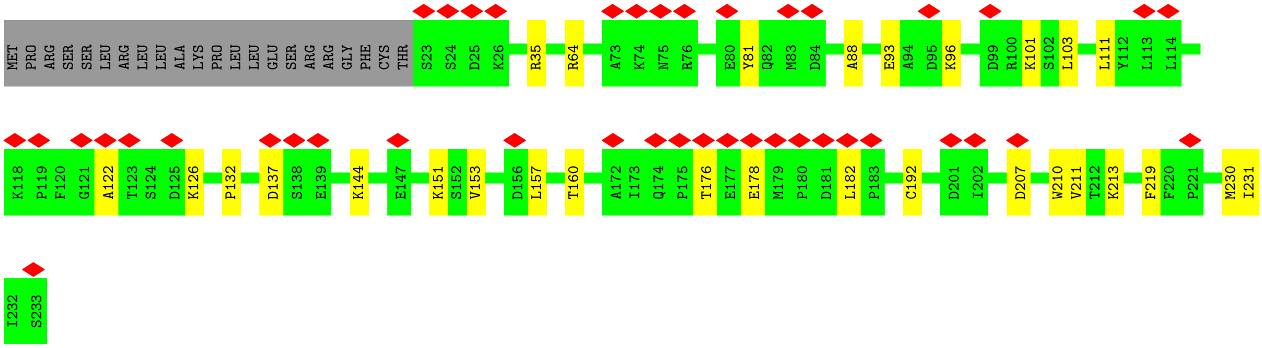
- Molecule 63: mL43

Chain 1k:



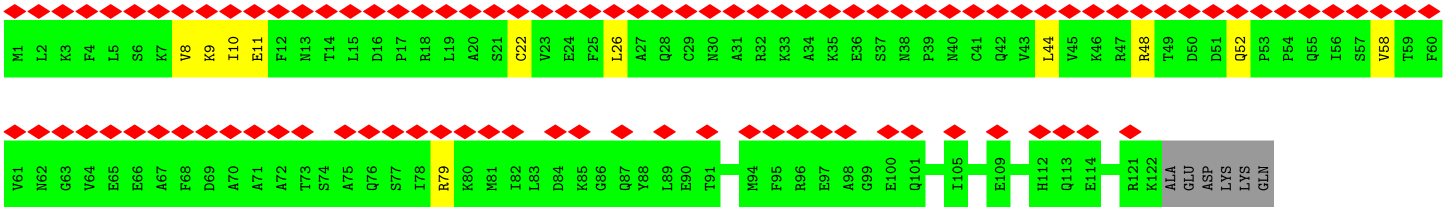
- Molecule 64: mL46

Chain 1l:



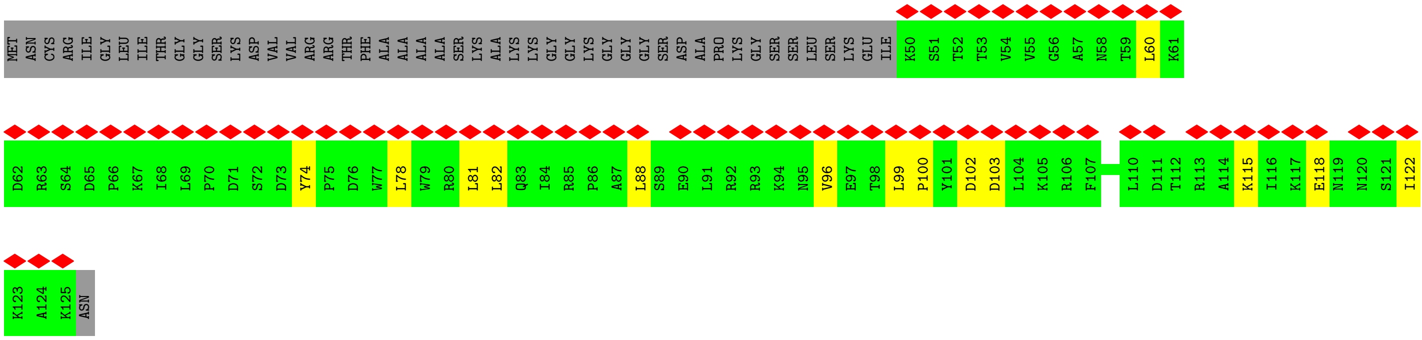
- Molecule 65: mL53

Chain 1m:



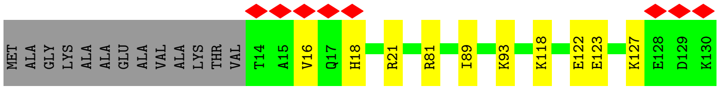
- Molecule 66: mL54

Chain 1o:



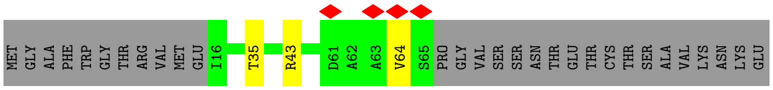
- Molecule 67: mL59/mL64

Chain 1p:



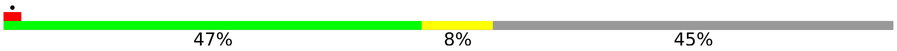
- Molecule 68: mL60

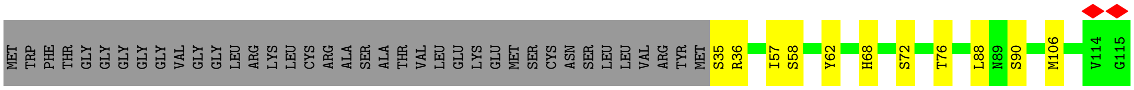
Chain 1q:

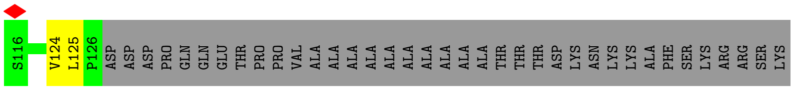


- Molecule 69: mL80

Chain 1r:

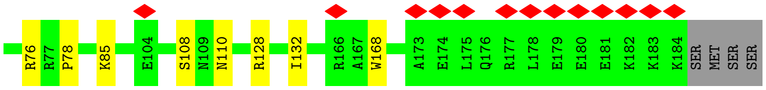






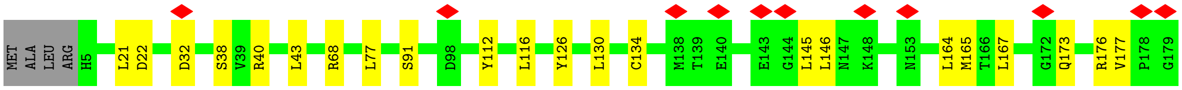
- Molecule 70: mL87

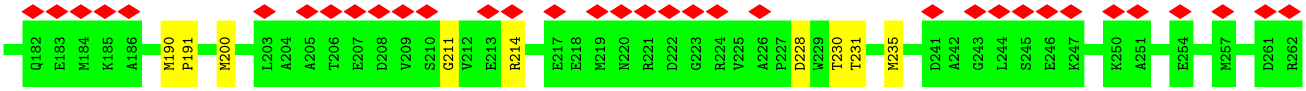
Chain 1s:

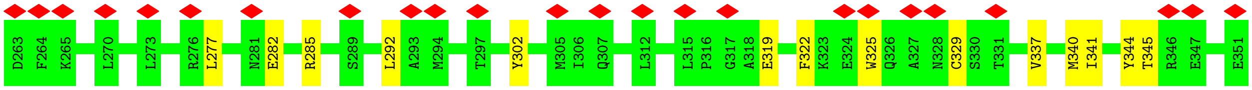


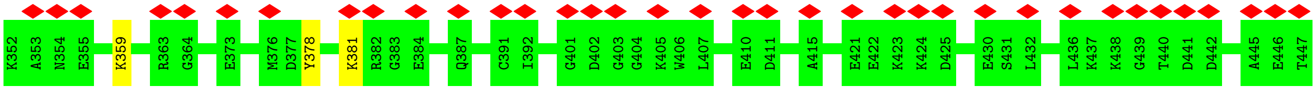
- Molecule 71: mL101 (rPPR4)

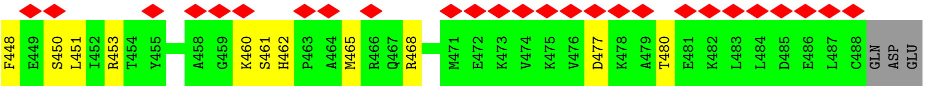
Chain 1t:





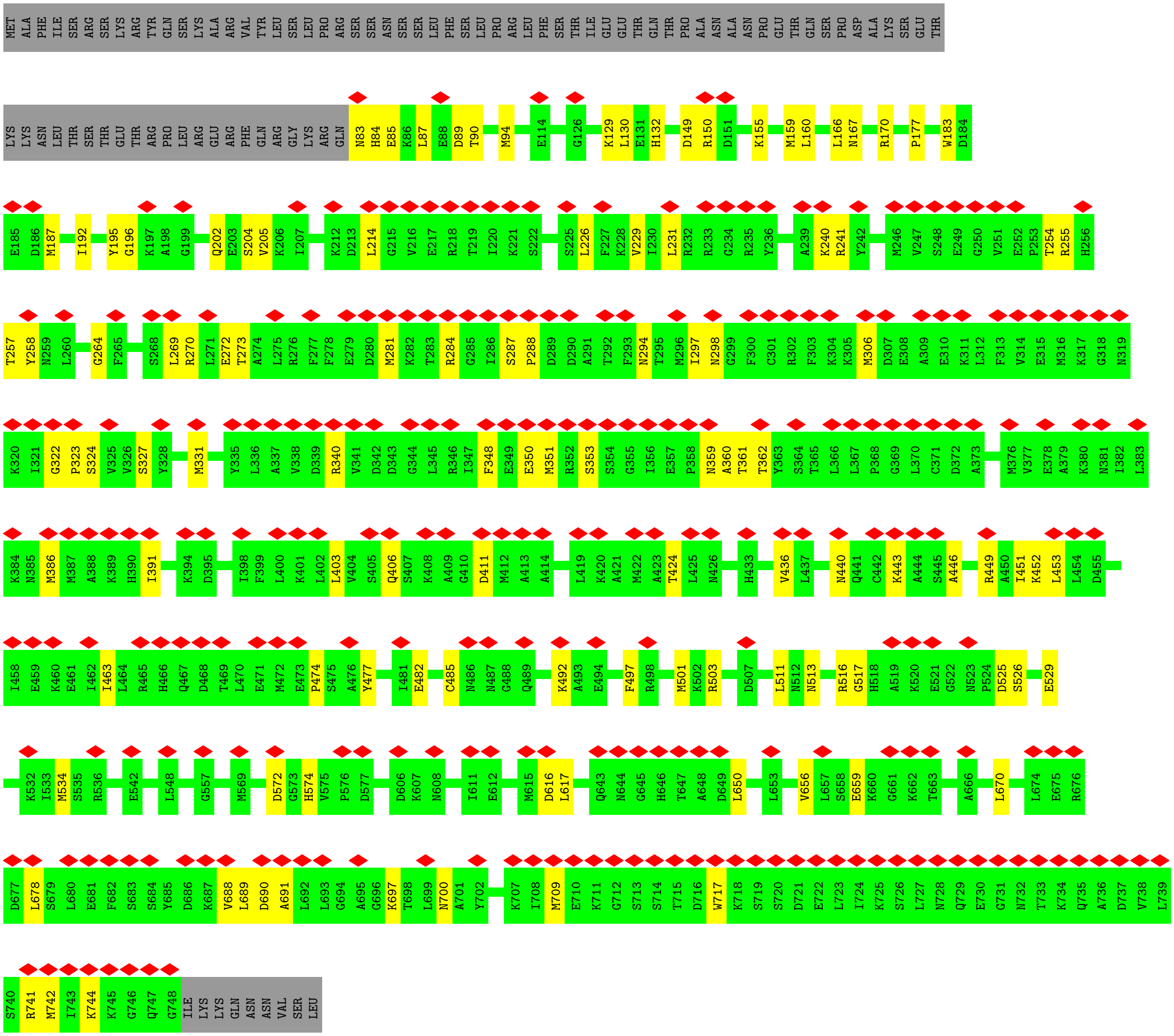






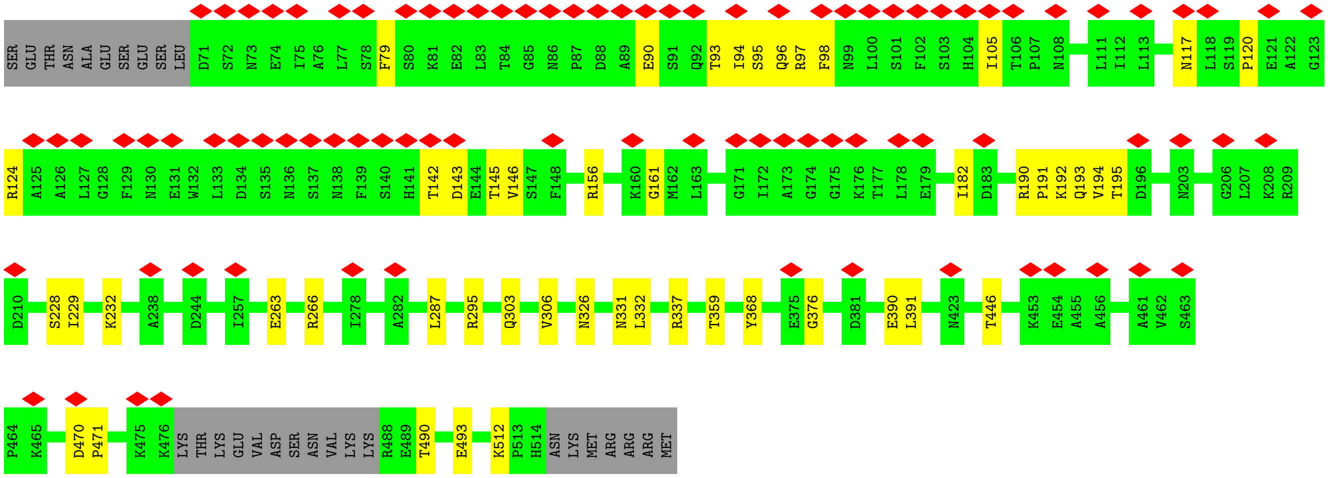
- Molecule 72: mL102 (rPPR5)

Chain 1u:



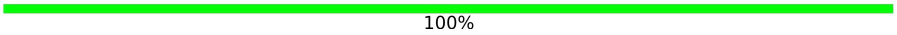
- Molecule 73: mL104 (rPPR9)

Chain 1v:



- Molecule 74: Nascent peptide

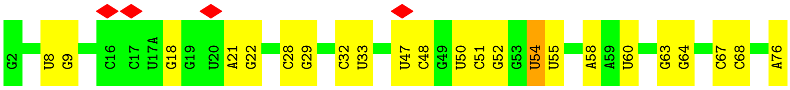
Chain 1x:



There are no outlier residues recorded for this chain.

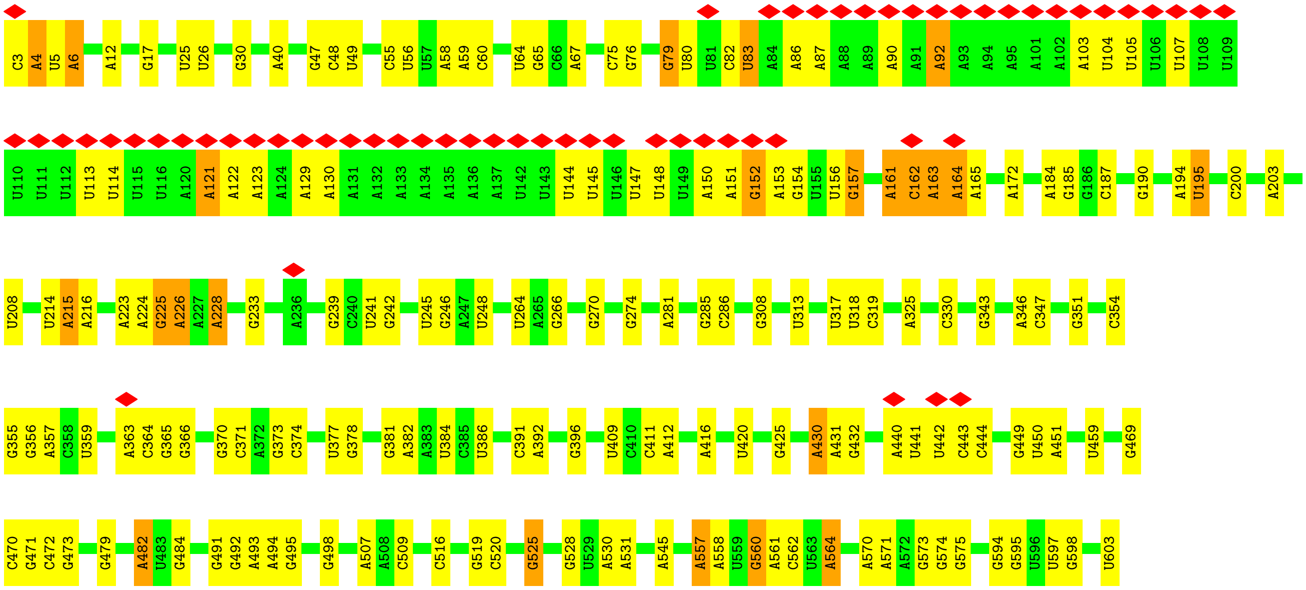
- Molecule 75: tRNA

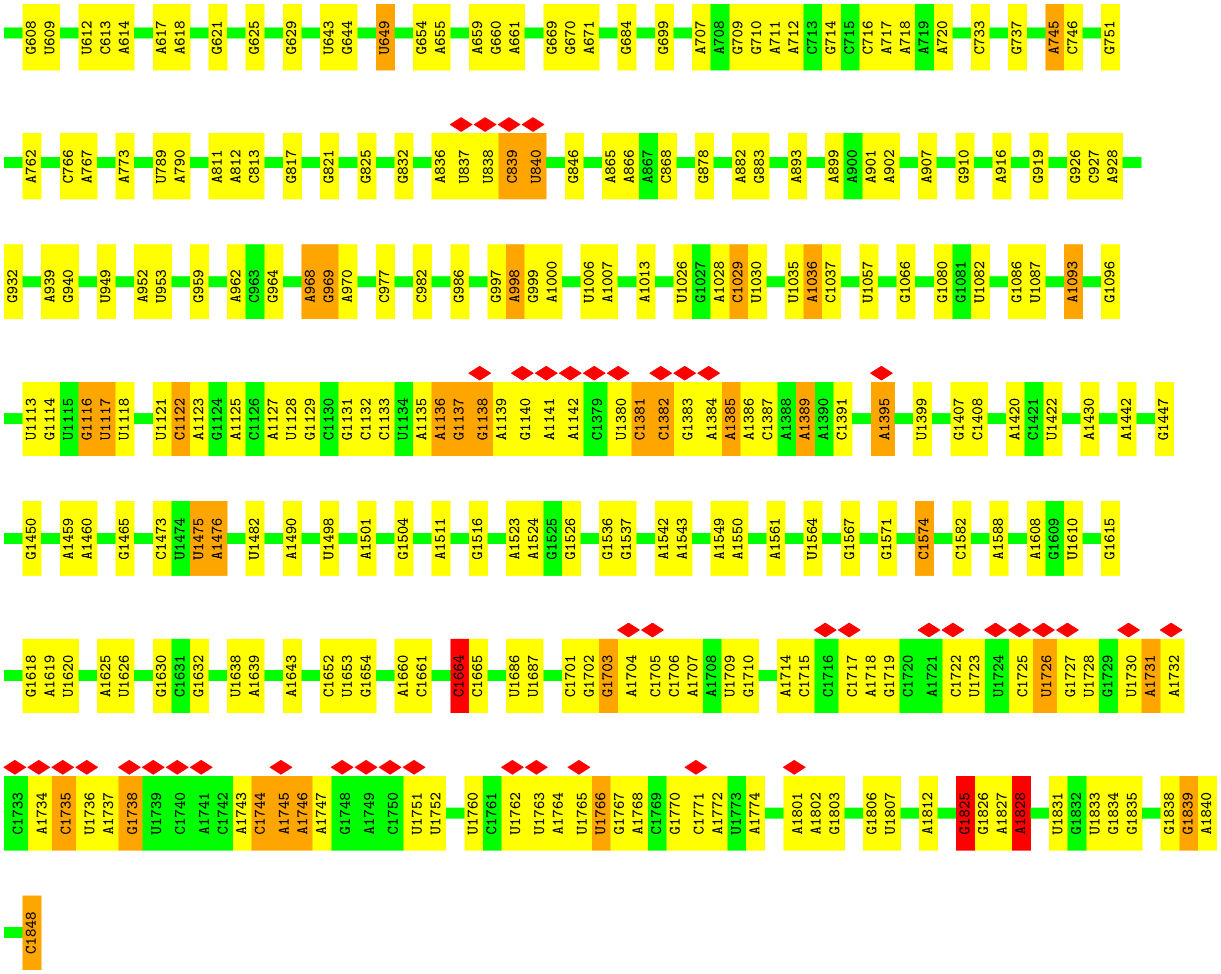
Chain 5:



- Molecule 76: 18S rRNA

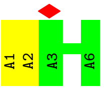
Chain 2:





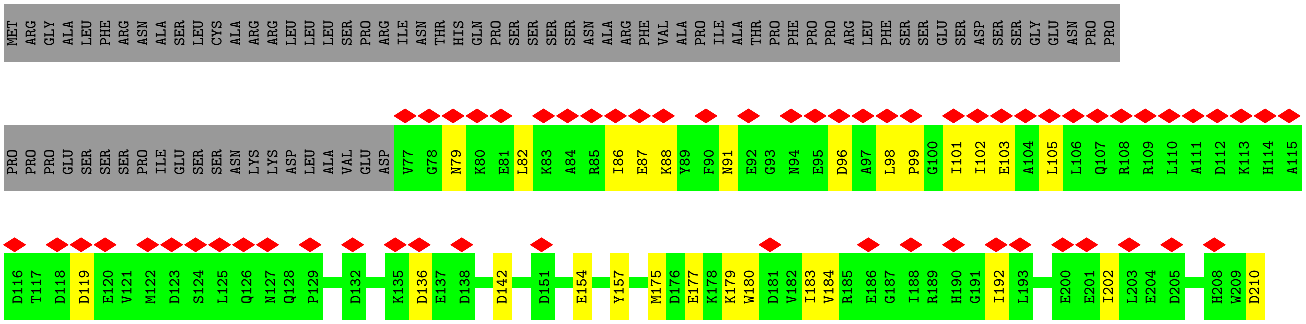
- Molecule 77: mRNA

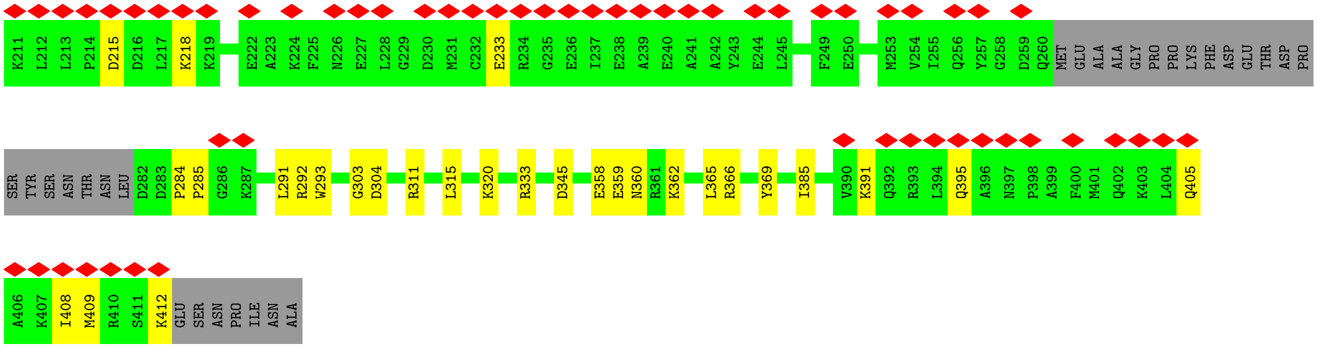
Chain 6:



- Molecule 78: mS35

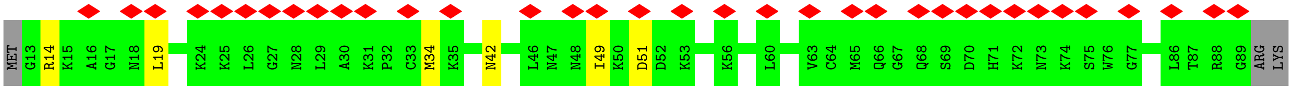
Chain a:





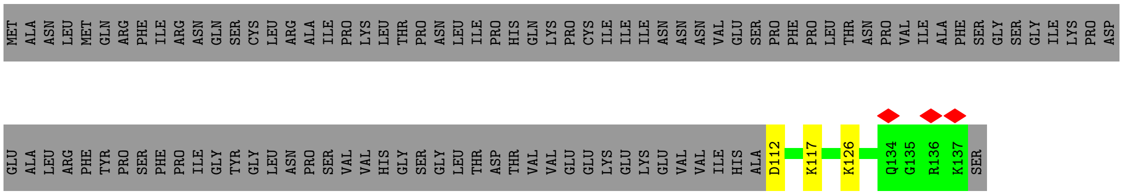
- Molecule 79: mS37

Chain b:



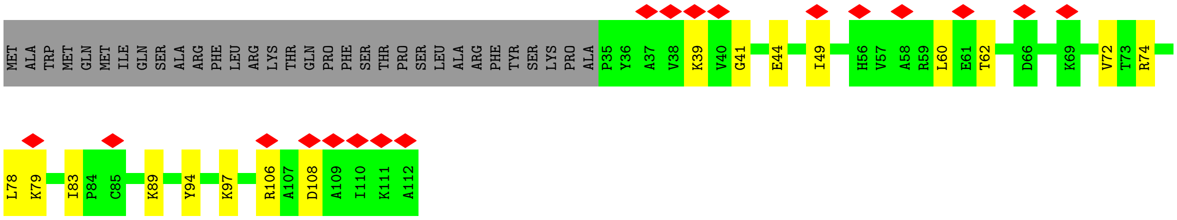
- Molecule 80: mS38

Chain c:



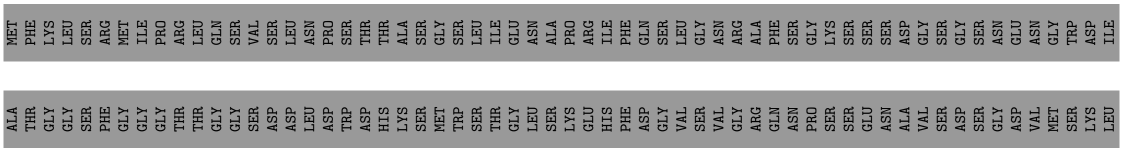
- Molecule 81: mS41

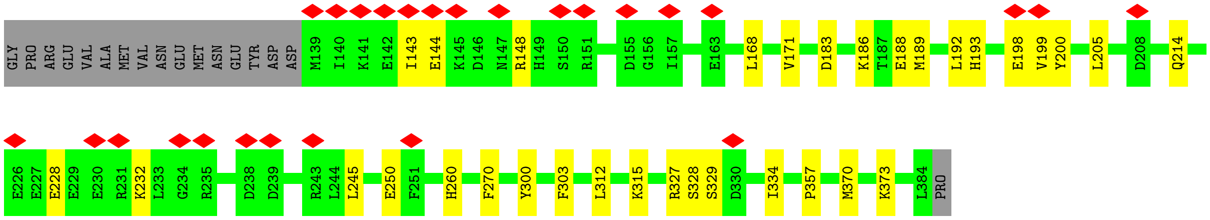
Chain d:



- Molecule 82: mS45

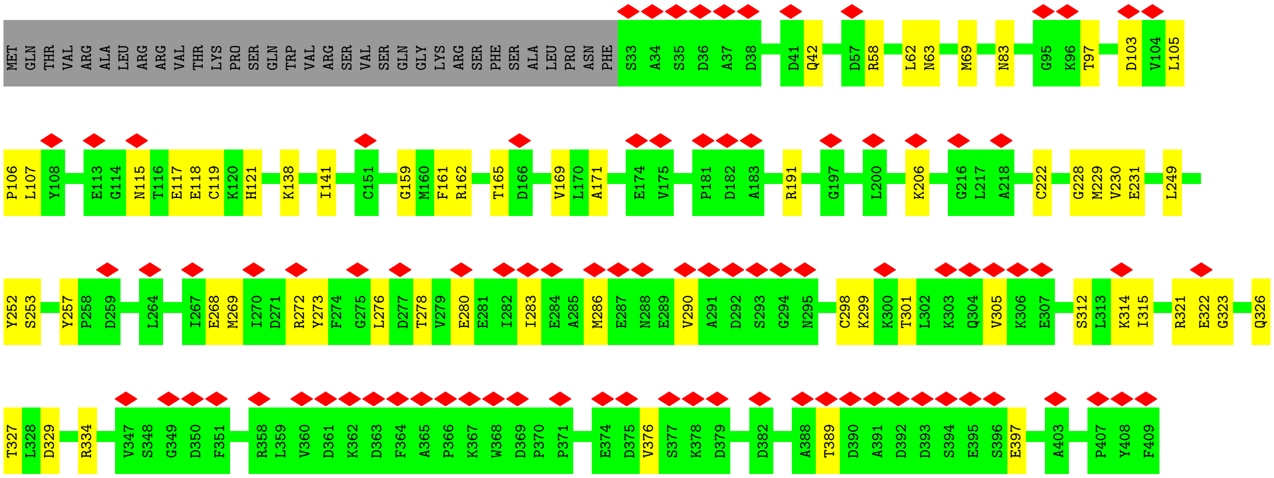
Chain e:





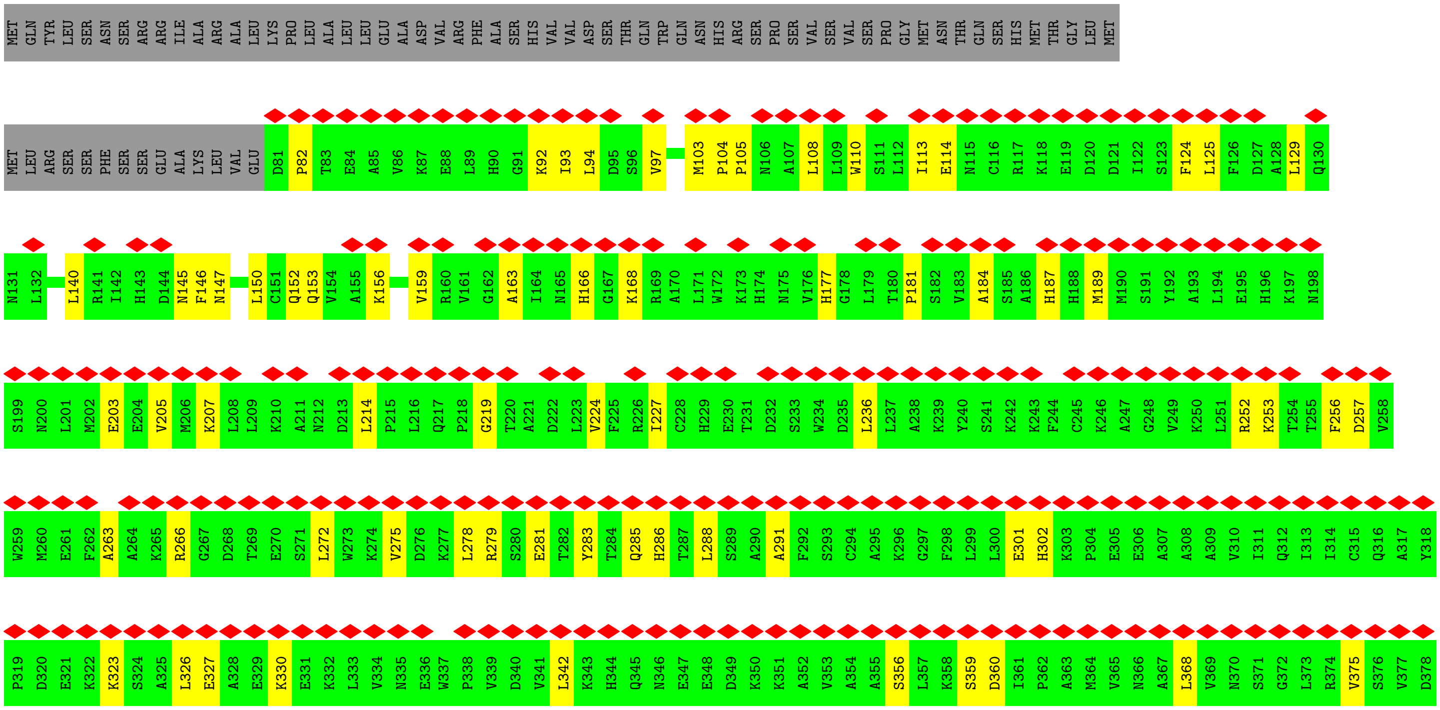
- Molecule 83: mS47

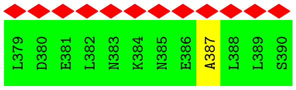
Chain f:



- Molecule 84: mS83 (rPPR10)

Chain h:

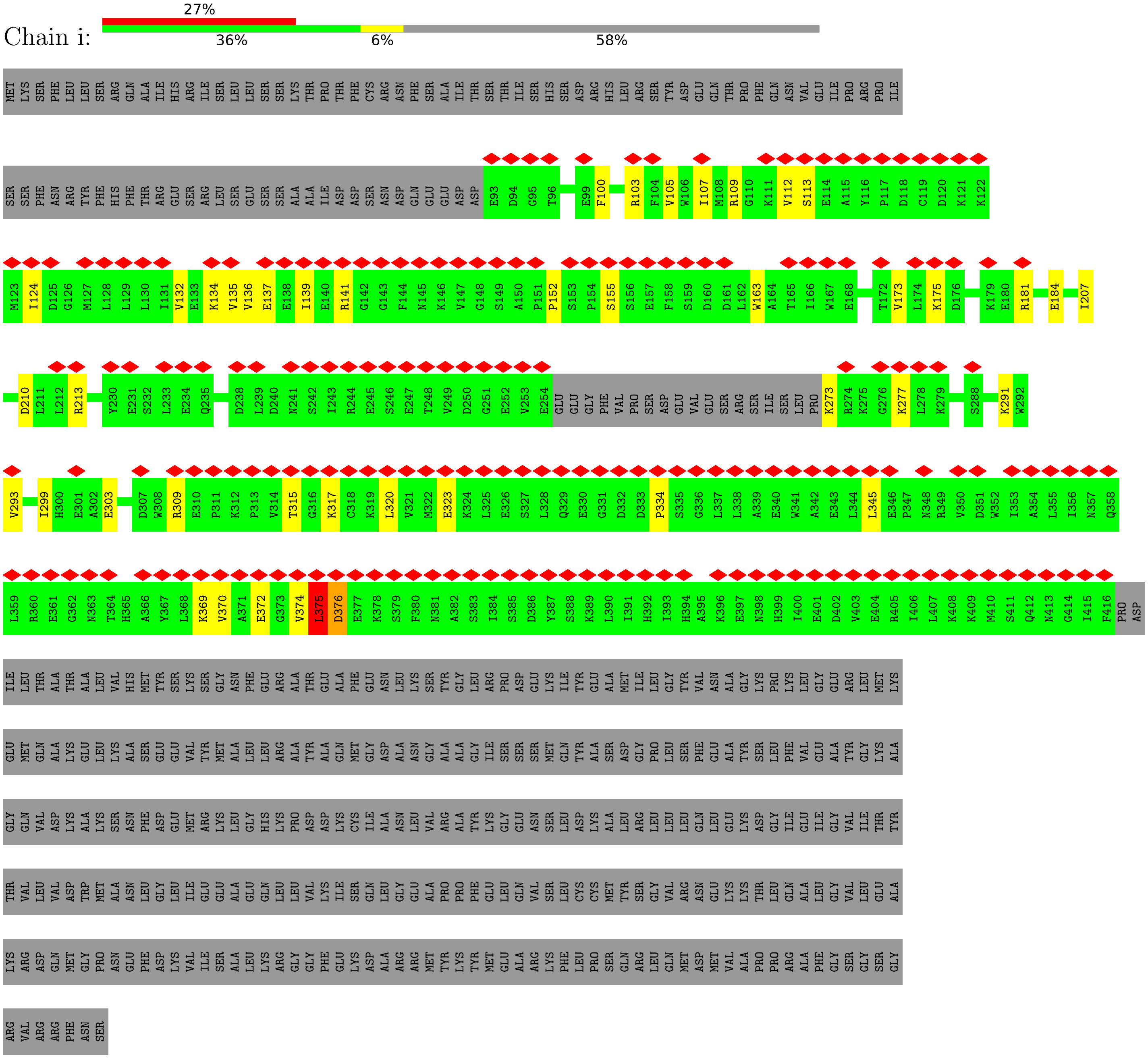




L379 D380 E381 L382 N383 K384 N385 E386 A387 L388 L389 S390

- Molecule 85: mS77 (NFD5)

Chain i:



MET LYS SER PHE LEU LEU SER ARG GLN ALA ILE HIS ARG ILE SER LEU LEU SER SER LYS THR PRO THR PHE CYS ARG ASN PHE SER ALA ILE THR SER THR ILE SER HIS SER ASP ARG HIS LEU ARG SER TYR ASP GLU GLN THR PRO PHE GLN ASN VAL GLU ILE PRO ARG PRO ILE

SER SER PHE ASN ARG TYR PHE HIS PHE THR ARG GLU SER ARG LEU SER GLU SER SER ALA ALA ILE ASP ASP SER ASN ASP GLN GLU GLU ASP ASP E93 D94 G95 T96 E99 F100 R103 F104 V105 W106 I107 M108 R109 G110 K111 V112 S113 E114 A115 Y116 P117 D118 C119 D120 K121 K122

M123 I124 D125 G126 M127 L128 L129 L130 I131 V132 E133 K134 V135 V136 E137 E138 I139 E140 R141 G142 G143 F144 N145 K146 V147 G148 S149 A150 P151 P152 S153 P154 S155 S156 E157 F158 S159 D160 D161 L162 W163 A164 T165 I166 W167 E168 T172 V173 L174 K175 D176 K179 E180 R181 E184 I207

D210 L211 L212 R213 Y230 E231 S232 L233 E234 Q235 D238 L239 D240 N241 S242 I243 R244 E245 S246 E247 T248 V249 D250 G251 E252 V253 E254 GLU GLU GLY PHE VAL PRO SER ASP GLU VAL GLU SER ARG SER ILE SER LEU PRO K273 R274 K275 G276 K277 L278 K279 S288 K291 W292

V293 I299 H300 E301 A302 E303 D307 W308 R309 E310 P311 K312 P313 V314 T315 G316 K317 C318 K319 L320 V321 M322 E323 K324 L325 E326 S327 L328 Q329 E330 G331 D332 D333 P334 S335 G336 L337 L338 A339 E340 W341 A342 E343 L344 L345 E346 P347 N348 R349 V350 D351 W352 I353 A354 L355 I356 N357 Q358

L359 R360 E361 G362 N363 T364 H365 A366 Y367 L368 K369 V370 A371 E372 G373 V374 L375 D376 E377 K378 S379 F380 N381 A382 S383 I384 S385 D386 Y387 S388 K389 L390 I391 H392 I393 H394 A395 K396 E397 N398 H399 I400 E401 D402 V403 E404 R405 I406 L407 K408 K409 M410 S411 Q412 N413 G414 I415 F416 PRO ASP

ILE LEU THR ALA THR ALA LEU VAL HIS MET TYR SER LYS SER GLY ASN PHE GLU ARG ALA THR GLU ALA PHE GLU ASN LEU LYS SER TYR GLY LEU ARG PRO ASP GLU LYS ILE TYR GLU ALA MET ILE LEU GLY TYR VAL ASN ALA GLY LYS PRO LYS LEU GLY GLU ARG LEU MET LYS

GLU MET GLN ALA LYS GLU LEU LYS ALA SER GLU GLU VAL TYR MET ALA LEU LEU ARG ALA TYR ALA GLN MET GLY ASP ALA ASN GLY ALA ALA GLY ILE SER SER SER MET GLN TYR ALA SER ASP GLY PRO LEU SER PHE GLU ALA TYR SER LEU PHE VAL GLU ALA TYR GLY LYS ALA

GLY GLN VAL ASP LYS ALA LYS SER ASN PHE ASP GLU MET ARG LYS LEU GLY HIS LYS PRO ASP ASP LYS CYS ILE ALA ASN LEU VAL ARG ALA TYR LYS GLY GLU ASN SER LEU ASP LYS ALA LEU ARG LEU LEU LEU GLN LEU GLU LYS ASP GLY ILE GLU ILE GLY VAL ILE THR TYR

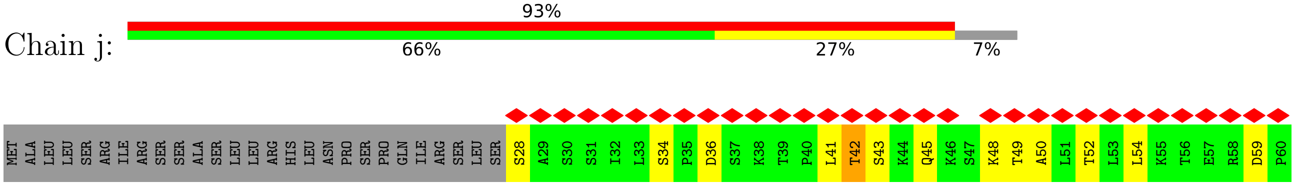
THR VAL LEU VAL ASP TRP MET ALA ASN LEU GLY LEU ILE GLU GLU ALA GLU GLN LEU LEU VAL LYS ILE SER GLN LEU GLY GLU ALA PRO PRO PHE GLU LEU GLN VAL SER LEU CYS CYS MET TYR SER GLY VAL ARG ASN GLU LYS LYS THR LEU GLN ALA LEU GLY VAL LEU GLU ALA

LYS ARG ASP GLN MET GLY PRO ASN GLU PHE ASP LYS VAL ILE SER ALA LEU LYS ARG GLY GLY PHE GLU LYS ASP ALA ARG ARG MET TYR LYS TYR MET GLU ALA ARG LYS PHE LEU PRO SER GLN ARG LEU GLN MET ASP MET VAL ALA PRO PRO ARG ALA PHE GLY SER GLY SER GLY

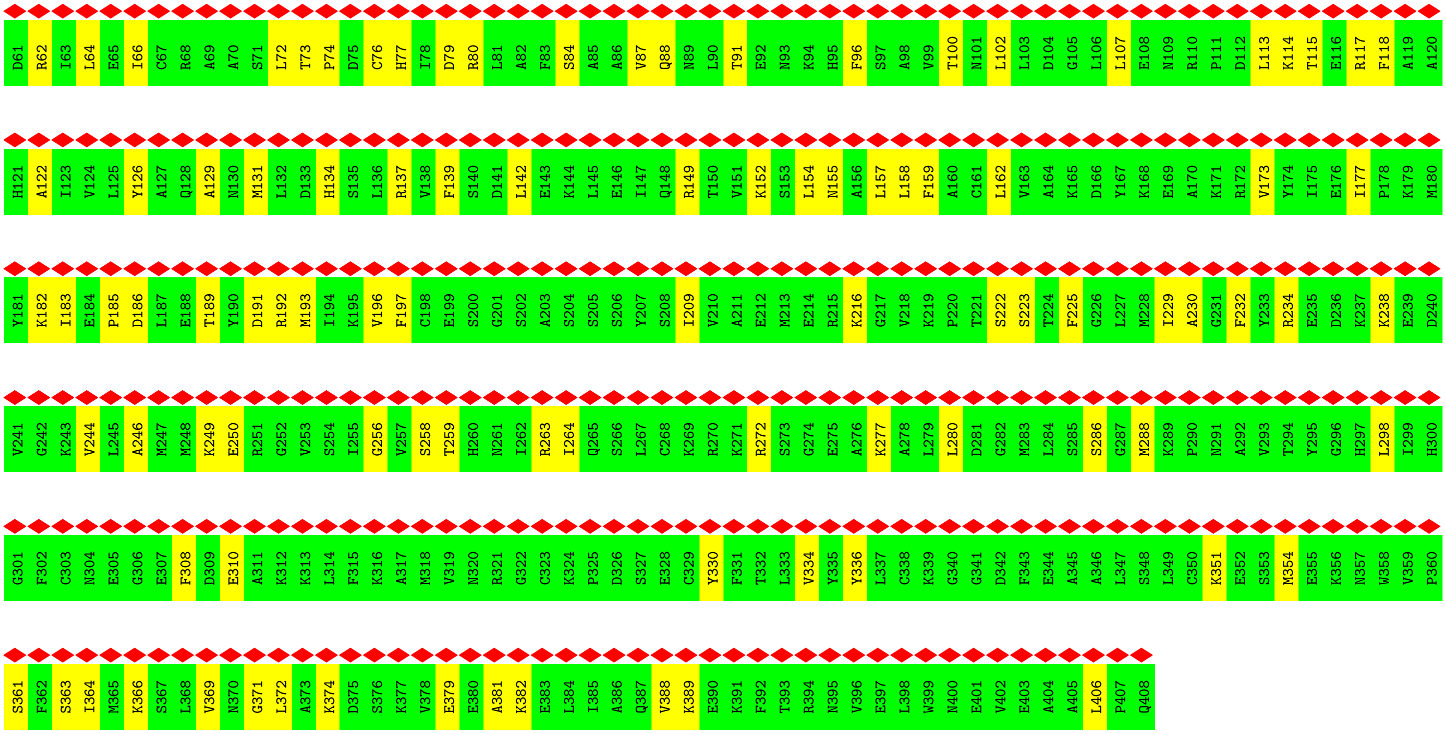
ARG VAL ARG PHE ASN SER

- Molecule 86: mS76 (rPPR1)

Chain j:

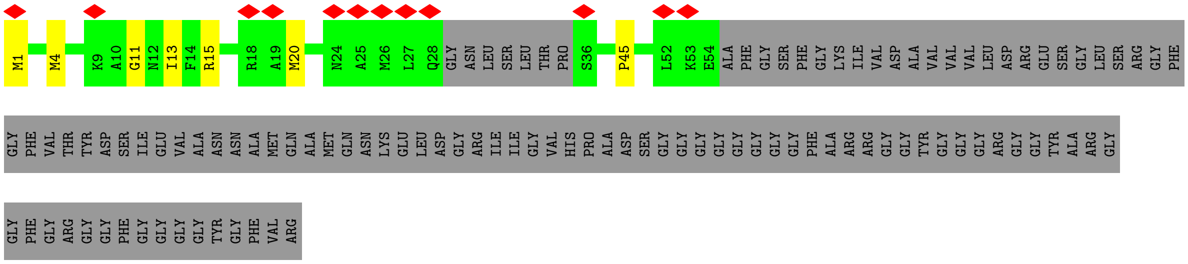


MET ALA LEU LEU SER ARG ILE ARG SER SER ALA SER LEU LEU ARG HIS LEU ASN PRO SER PRO GLN ILE ARG SER LEU SER S28 A29 S30 S31 I32 L33 S34 P35 D36 S37 K38 T39 P40 L41 T42 S43 K44 Q45 K46 S47 K48 T49 A50 L51 T52 L53 L54 K55 T56 E57 R58 D59 P60



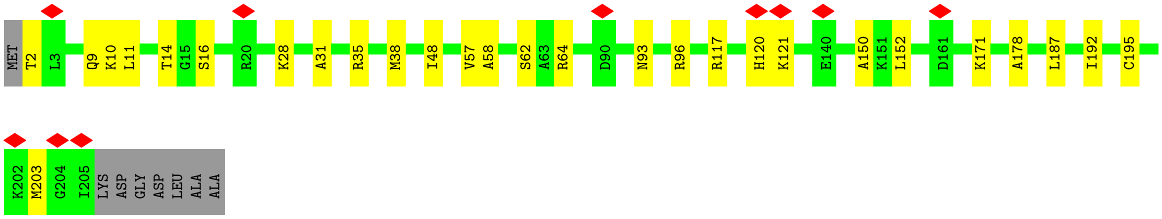
- Molecule 87: mS86

Chain k:



- Molecule 88: uS2m

Chain A:



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	34964	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	TFS KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	45	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K2 QUANTUM (4k x 4k)	Depositor
Maximum map value	0.541	Depositor
Minimum map value	-0.257	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.019	Depositor
Recommended contour level	0.0796	Depositor
Map size (Å)	596.712, 596.712, 596.712	wwPDB
Map dimensions	564, 564, 564	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.058, 1.058, 1.058	Depositor

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: K, 5MC, G7M, H2U, OMU, 2MA, PSU, OMG, 5MU, ZN, ATP, 4OC, 4SU, MA6, CLM, UR3, 2MG, OMC, MG

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 5$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\| > 5$	RMSZ	$\#\|Z\| > 5$
1	B	0.26	0/3969	0.54	2/5320 (0.0%)
2	C	0.27	0/2865	0.45	0/3836
3	D	0.27	0/3474	0.46	0/4647
4	E	0.27	0/838	0.41	0/1121
5	F	0.27	0/1225	0.53	0/1641
6	G	0.27	0/1054	0.44	0/1418
7	H	0.37	1/1707 (0.1%)	0.59	1/2287 (0.0%)
8	I	0.27	0/964	0.46	0/1293
9	J	0.38	0/1000	0.50	0/1340
10	K	0.24	0/1009	0.39	0/1345
11	L	0.32	0/950	0.52	0/1263
12	M	0.44	0/856	0.52	0/1134
13	N	0.26	0/958	0.41	0/1280
14	O	0.30	0/890	0.50	0/1196
15	P	0.28	0/730	0.48	1/984 (0.1%)
16	Q	0.23	0/733	0.41	0/978
17	R	0.24	0/1323	0.48	0/1772
18	S	0.27	0/614	0.41	0/809
19	T	0.28	0/416	0.40	0/547
20	U	0.51	1/1036 (0.1%)	0.90	8/1395 (0.6%)
21	V	0.19	0/1423	0.39	0/1895
22	W	0.22	0/3139	0.41	0/4250
23	X	0.27	0/1644	0.53	0/2216
24	Y	0.37	0/807	0.46	0/1077
25	Z	0.18	0/669	0.39	0/900
26	1	0.35	0/69733	0.40	1/108691 (0.0%)
27	3	0.31	0/2810	0.39	0/4378
28	1B	0.31	0/1347	0.43	0/1797
29	1C	0.38	0/1727	0.57	4/2311 (0.2%)
30	1D	0.32	0/2099	0.43	0/2836
31	1E	0.31	0/1786	0.41	0/2412

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
32	1F	0.26	0/1313	0.48	0/1772
33	1G	0.22	0/796	0.43	0/1067
34	1H	0.27	0/547	0.47	0/731
35	1I	0.24	0/1054	0.56	0/1417
36	1J	0.27	0/1155	0.61	1/1563 (0.1%)
37	1K	0.29	0/1553	0.36	0/2080
38	1L	0.30	0/976	0.47	0/1304
39	1M	0.32	0/1682	0.46	2/2248 (0.1%)
40	1N	0.28	0/1184	0.42	0/1580
41	1O	0.30	0/1255	0.43	0/1687
42	1P	0.28	0/895	0.47	0/1206
43	1Q	0.30	0/1022	0.39	0/1368
44	1R	0.37	0/930	0.41	0/1234
45	1S	0.31	0/1192	0.39	0/1602
46	1T	0.32	0/1259	0.41	0/1687
47	1U	0.28	0/1065	0.39	0/1421
48	1V	0.28	0/1247	0.37	0/1681
49	1W	0.24	0/1613	0.49	0/2180
50	1X	0.24	0/1703	0.41	0/2307
51	1Y	0.32	0/785	0.38	0/1051
52	1Z	0.31	0/1466	0.47	2/1954 (0.1%)
53	1a	0.32	0/946	0.43	0/1262
54	1b	0.30	0/818	0.47	0/1099
55	1c	0.29	0/501	0.44	0/666
56	1d	0.44	0/387	0.63	1/514 (0.2%)
57	1e	0.33	0/468	0.39	0/618
58	1f	0.40	0/370	0.43	0/486
59	1g	0.37	0/789	0.45	0/1048
60	1h	0.29	0/312	0.38	0/409
61	1i	0.24	0/1440	0.38	0/1927
62	1j	0.35	0/586	0.41	0/789
63	1k	0.32	0/970	0.45	0/1309
64	1l	0.26	0/1792	0.45	0/2423
65	1m	0.23	0/987	0.48	0/1331
66	1o	0.17	0/637	0.43	0/860
67	1p	0.26	0/1014	0.39	0/1349
68	1q	0.31	0/394	0.40	0/527
69	1r	0.26	0/750	0.45	0/1005
70	1s	0.27	0/1001	0.41	0/1327
71	1t	0.26	0/3919	0.48	0/5272
72	1u	0.24	0/5345	0.51	0/7180
73	1v	0.25	0/3497	0.46	0/4681
74	1x	0.19	0/18	0.26	0/23

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
75	5	0.24	0/1725	0.33	0/2689
76	2	0.29	0/37992	0.37	0/59224
77	6	0.19	0/146	0.22	0/225
78	a	0.25	0/2524	0.54	2/3387 (0.1%)
79	b	0.29	0/618	0.68	0/822
80	c	0.27	0/233	0.40	0/296
81	d	0.26	0/628	0.47	0/840
82	e	0.25	0/2118	0.48	0/2828
83	f	0.25	0/2981	0.50	0/4033
84	h	0.29	0/2507	0.54	0/3384
85	i	0.24	0/2532	0.49	1/3400 (0.0%)
86	j	0.24	0/3032	0.56	1/4073 (0.0%)
87	k	0.25	0/317	0.58	1/424 (0.2%)
88	A	0.25	0/1647	0.47	0/2227
All	All	0.31	2/224428 (0.0%)	0.43	28/325466 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
7	H	0	1
11	L	0	1
30	1D	0	1
71	1t	0	1
All	All	0	4

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
7	H	404	LEU	CG-CD2	-5.93	1.32	1.52
20	U	81	PRO	N-CD	5.13	1.54	1.47

The worst 5 of 28 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
20	U	80	ASP	C-N-CD	-14.93	63.78	125.00
20	U	71	PRO	N-CA-C	-9.97	99.67	113.53
20	U	81	PRO	CA-N-CD	-9.66	98.47	112.00
36	1J	38	PRO	CA-N-CD	-9.01	99.39	112.00
20	U	61	ARG	N-CA-C	-8.98	101.90	113.12

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
30	1D	225	ASP	Peptide
71	1t	462	HIS	Peptide
7	H	225	ILE	Peptide
11	L	136	ARG	Sidechain

5.2 Too-close contacts ⓘ

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	B	3877	0	4008	100	0
2	C	2811	0	2986	26	0
3	D	3425	0	3453	28	0
4	E	823	0	879	6	0
5	F	1254	0	1268	14	0
6	G	1037	0	1058	9	0
7	H	1682	0	1726	27	0
8	I	941	0	970	15	0
9	J	988	0	1022	13	0
10	K	992	0	1051	15	0
11	L	940	0	989	9	0
12	M	843	0	884	11	0
13	N	941	0	978	4	0
14	O	869	0	898	12	0
15	P	717	0	755	10	0
16	Q	724	0	744	10	0
17	R	1299	0	1307	21	0
18	S	611	0	687	7	0
19	T	408	0	444	4	0
20	U	1014	0	1061	62	0
21	V	1399	0	1427	10	0
22	W	3062	0	3030	23	0
23	X	1613	0	1559	57	0
24	Y	793	0	834	12	0
25	Z	649	0	662	5	0
26	1	62518	0	31499	260	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
27	3	2513	0	1275	4	0
28	1B	1325	0	1398	12	0
29	1C	1696	0	1745	51	0
30	1D	2045	0	2080	18	0
31	1E	1753	0	1815	19	0
32	1F	1286	0	1280	10	0
33	1G	779	0	810	5	0
34	1H	539	0	574	22	0
35	1I	1036	0	1084	40	0
36	1J	1129	0	1166	52	0
37	1K	1526	0	1586	8	0
38	1L	966	0	1048	6	0
39	1M	1649	0	1765	10	0
40	1N	1160	0	1206	6	0
41	1O	1231	0	1262	7	0
42	1P	878	0	939	3	0
43	1Q	1008	0	1101	5	0
44	1R	915	0	946	6	0
45	1S	1170	0	1226	3	0
46	1T	1241	0	1346	5	0
47	1U	1048	0	1123	14	0
48	1V	1223	0	1278	12	0
49	1W	1588	0	1663	23	0
50	1X	1670	0	1751	10	0
51	1Y	768	0	792	7	0
52	1Z	1441	0	1485	17	0
53	1a	928	0	959	9	0
54	1b	803	0	845	12	0
55	1c	489	0	511	10	0
56	1d	379	0	416	1	0
57	1e	459	0	491	1	0
58	1f	364	0	398	1	0
59	1g	770	0	841	6	0
60	1h	309	0	337	0	0
61	1i	1424	0	1482	16	0
62	1j	570	0	593	9	0
63	1k	952	0	987	5	0
64	1l	1741	0	1707	19	0
65	1m	970	0	979	8	0
66	1o	626	0	657	11	0
67	1p	992	0	1027	8	0
68	1q	390	0	421	2	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
69	1r	735	0	781	16	0
70	1s	985	0	1072	8	0
71	1t	3856	0	3912	37	0
72	1u	5264	0	5353	74	0
73	1v	3440	0	3497	29	0
74	1x	19	0	14	0	0
75	5	1625	0	828	5	0
76	2	34081	0	17178	192	0
77	6	130	0	66	1	0
78	a	2487	0	2382	69	0
79	b	610	0	626	6	0
80	c	232	0	278	3	0
81	d	616	0	674	11	0
82	e	2074	0	2074	24	0
83	f	2922	0	2868	73	0
84	h	2460	0	2478	73	0
85	i	2487	0	2450	39	0
86	j	2984	0	3044	84	0
87	k	314	0	261	12	0
88	A	1611	0	1633	22	0
89	1	249	0	0	0	0
89	1D	1	0	0	0	0
89	1h	1	0	0	0	0
89	1j	1	0	0	0	0
89	1q	2	0	0	0	0
89	2	98	0	0	0	0
89	3	3	0	0	0	0
89	T	1	0	0	0	0
89	W	1	0	0	0	0
90	W	31	0	12	0	0
91	1	20	0	11	0	0
92	1	56	0	0	0	0
92	1B	3	0	0	0	0
92	1E	1	0	0	0	0
92	2	14	0	0	0	0
93	1d	1	0	0	0	0
93	1h	1	0	0	0	0
All	All	211395	0	164066	1717	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 5.

The worst 5 of 1717 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
75:5:54:5MU:C4	75:5:54:5MU:C5	1.82	1.65
36:1J:42:ASN:HB2	36:1J:73:HIS:CE1	1.37	1.60
29:1C:227:ARG:NH2	29:1C:229:HIS:HB2	1.21	1.44
36:1J:42:ASN:HB2	36:1J:73:HIS:NE2	1.33	1.41
29:1C:199:VAL:CG1	34:1H:97:ARG:HD2	1.53	1.39

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	B	457/554 (82%)	425 (93%)	31 (7%)	1 (0%)	44	71
2	C	329/362 (91%)	317 (96%)	12 (4%)	0	100	100
3	D	413/501 (82%)	397 (96%)	15 (4%)	1 (0%)	44	71
4	E	99/138 (72%)	96 (97%)	3 (3%)	0	100	100
5	F	146/157 (93%)	140 (96%)	6 (4%)	0	100	100
6	G	126/129 (98%)	122 (97%)	4 (3%)	0	100	100
7	H	209/383 (55%)	197 (94%)	11 (5%)	1 (0%)	25	54
8	I	111/228 (49%)	107 (96%)	4 (4%)	0	100	100
9	J	125/304 (41%)	121 (97%)	4 (3%)	0	100	100
10	K	122/125 (98%)	118 (97%)	4 (3%)	0	100	100
11	L	117/154 (76%)	110 (94%)	7 (6%)	0	100	100
12	M	99/155 (64%)	96 (97%)	3 (3%)	0	100	100
13	N	114/414 (28%)	113 (99%)	1 (1%)	0	100	100
14	O	108/136 (79%)	104 (96%)	4 (4%)	0	100	100
15	P	89/110 (81%)	84 (94%)	4 (4%)	1 (1%)	12	35
16	Q	88/237 (37%)	87 (99%)	1 (1%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
17	R	162/212 (76%)	152 (94%)	10 (6%)	0	100	100
18	S	73/100 (73%)	72 (99%)	1 (1%)	0	100	100
19	T	48/94 (51%)	44 (92%)	4 (8%)	0	100	100
20	U	125/192 (65%)	109 (87%)	9 (7%)	7 (6%)	1	7
21	V	162/193 (84%)	160 (99%)	2 (1%)	0	100	100
22	W	376/483 (78%)	368 (98%)	8 (2%)	0	100	100
23	X	202/496 (41%)	191 (95%)	8 (4%)	3 (2%)	8	29
24	Y	96/102 (94%)	95 (99%)	1 (1%)	0	100	100
25	Z	78/153 (51%)	74 (95%)	4 (5%)	0	100	100
28	1B	175/220 (80%)	171 (98%)	4 (2%)	0	100	100
29	1C	203/327 (62%)	194 (96%)	7 (3%)	2 (1%)	13	38
30	1D	262/319 (82%)	257 (98%)	5 (2%)	0	100	100
31	1E	219/297 (74%)	217 (99%)	2 (1%)	0	100	100
32	1F	154/185 (83%)	148 (96%)	6 (4%)	0	100	100
33	1G	96/102 (94%)	95 (99%)	1 (1%)	0	100	100
34	1H	64/219 (29%)	63 (98%)	1 (2%)	0	100	100
35	1I	128/170 (75%)	119 (93%)	8 (6%)	1 (1%)	16	43
36	1J	145/156 (93%)	132 (91%)	11 (8%)	2 (1%)	9	30
37	1K	187/204 (92%)	184 (98%)	3 (2%)	0	100	100
38	1L	125/176 (71%)	119 (95%)	6 (5%)	0	100	100
39	1M	208/281 (74%)	195 (94%)	13 (6%)	0	100	100
40	1N	146/179 (82%)	143 (98%)	3 (2%)	0	100	100
41	1O	149/160 (93%)	141 (95%)	8 (5%)	0	100	100
42	1P	111/114 (97%)	102 (92%)	9 (8%)	0	100	100
43	1Q	120/233 (52%)	116 (97%)	4 (3%)	0	100	100
44	1R	108/126 (86%)	107 (99%)	1 (1%)	0	100	100
45	1S	143/270 (53%)	139 (97%)	4 (3%)	0	100	100
46	1T	153/264 (58%)	148 (97%)	5 (3%)	0	100	100
47	1U	126/180 (70%)	120 (95%)	6 (5%)	0	100	100
48	1V	156/159 (98%)	152 (97%)	4 (3%)	0	100	100
49	1W	203/249 (82%)	192 (95%)	11 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
50	1X	214/271 (79%)	209 (98%)	5 (2%)	0	100	100
51	1Y	96/156 (62%)	94 (98%)	2 (2%)	0	100	100
52	1Z	175/212 (82%)	174 (99%)	1 (1%)	0	100	100
53	1a	106/144 (74%)	104 (98%)	2 (2%)	0	100	100
54	1b	98/109 (90%)	94 (96%)	4 (4%)	0	100	100
55	1c	57/135 (42%)	54 (95%)	3 (5%)	0	100	100
56	1d	47/139 (34%)	47 (100%)	0	0	100	100
57	1e	52/63 (82%)	51 (98%)	1 (2%)	0	100	100
58	1f	42/146 (29%)	42 (100%)	0	0	100	100
59	1g	89/162 (55%)	89 (100%)	0	0	100	100
60	1h	36/103 (35%)	34 (94%)	2 (6%)	0	100	100
61	1i	181/247 (73%)	176 (97%)	5 (3%)	0	100	100
62	1j	69/90 (77%)	68 (99%)	1 (1%)	0	100	100
63	1k	116/119 (98%)	111 (96%)	5 (4%)	0	100	100
64	1l	209/233 (90%)	198 (95%)	11 (5%)	0	100	100
65	1m	120/128 (94%)	119 (99%)	1 (1%)	0	100	100
66	1o	74/125 (59%)	70 (95%)	4 (5%)	0	100	100
67	1p	115/130 (88%)	112 (97%)	3 (3%)	0	100	100
68	1q	48/79 (61%)	47 (98%)	0	1 (2%)	5	21
69	1r	90/167 (54%)	84 (93%)	6 (7%)	0	100	100
70	1s	116/181 (64%)	113 (97%)	3 (3%)	0	100	100
71	1t	482/491 (98%)	468 (97%)	14 (3%)	0	100	100
72	1u	664/757 (88%)	624 (94%)	40 (6%)	0	100	100
73	1v	429/521 (82%)	412 (96%)	17 (4%)	0	100	100
74	1x	2/4 (50%)	2 (100%)	0	0	100	100
78	a	311/424 (73%)	305 (98%)	6 (2%)	0	100	100
79	b	75/80 (94%)	68 (91%)	7 (9%)	0	100	100
80	c	24/128 (19%)	23 (96%)	1 (4%)	0	100	100
81	d	76/110 (69%)	74 (97%)	2 (3%)	0	100	100
82	e	244/383 (64%)	236 (97%)	8 (3%)	0	100	100
83	f	375/410 (92%)	361 (96%)	14 (4%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
84	h	308/384 (80%)	301 (98%)	7 (2%)	0	100	100
85	i	302/725 (42%)	290 (96%)	10 (3%)	2 (1%)	19	46
86	j	379/408 (93%)	365 (96%)	14 (4%)	0	100	100
87	k	43/155 (28%)	37 (86%)	6 (14%)	0	100	100
88	A	202/212 (95%)	196 (97%)	6 (3%)	0	100	100
All	All	13521/19033 (71%)	13005 (96%)	494 (4%)	22 (0%)	45	71

5 of 22 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
7	H	225	ILE
20	U	64	PRO
20	U	81	PRO
29	1C	227	ARG
35	1I	133	PRO

5.3.2 Protein sidechains (i)

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all EM entries.

The Analysed column shows the number of residues for which the sidechain conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	B	421/492 (86%)	421 (100%)	0	100	100
2	C	314/343 (92%)	314 (100%)	0	100	100
3	D	370/444 (83%)	370 (100%)	0	100	100
4	E	90/126 (71%)	90 (100%)	0	100	100
5	F	124/124 (100%)	124 (100%)	0	100	100
6	G	112/113 (99%)	112 (100%)	0	100	100
7	H	176/320 (55%)	175 (99%)	1 (1%)	84	90
8	I	104/197 (53%)	104 (100%)	0	100	100
9	J	108/256 (42%)	107 (99%)	1 (1%)	75	86
10	K	107/108 (99%)	107 (100%)	0	100	100
11	L	99/128 (77%)	99 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
12	M	90/137 (66%)	90 (100%)	0	100	100
13	N	107/362 (30%)	107 (100%)	0	100	100
14	O	93/117 (80%)	93 (100%)	0	100	100
15	P	78/95 (82%)	78 (100%)	0	100	100
16	Q	75/203 (37%)	75 (100%)	0	100	100
17	R	141/180 (78%)	141 (100%)	0	100	100
18	S	68/90 (76%)	68 (100%)	0	100	100
19	T	44/79 (56%)	44 (100%)	0	100	100
20	U	109/170 (64%)	104 (95%)	5 (5%)	23	49
21	V	147/173 (85%)	147 (100%)	0	100	100
22	W	328/410 (80%)	328 (100%)	0	100	100
23	X	174/395 (44%)	174 (100%)	0	100	100
24	Y	84/86 (98%)	84 (100%)	0	100	100
25	Z	65/119 (55%)	65 (100%)	0	100	100
28	1B	141/176 (80%)	141 (100%)	0	100	100
29	1C	184/268 (69%)	183 (100%)	1 (0%)	86	91
30	1D	216/264 (82%)	216 (100%)	0	100	100
31	1E	192/257 (75%)	192 (100%)	0	100	100
32	1F	145/168 (86%)	145 (100%)	0	100	100
33	1G	82/86 (95%)	82 (100%)	0	100	100
34	1H	58/195 (30%)	58 (100%)	0	100	100
35	1I	113/143 (79%)	113 (100%)	0	100	100
36	1J	125/131 (95%)	125 (100%)	0	100	100
37	1K	161/170 (95%)	161 (100%)	0	100	100
38	1L	103/140 (74%)	103 (100%)	0	100	100
39	1M	169/235 (72%)	169 (100%)	0	100	100
40	1N	116/146 (80%)	116 (100%)	0	100	100
41	1O	129/139 (93%)	129 (100%)	0	100	100
42	1P	94/95 (99%)	94 (100%)	0	100	100
43	1Q	110/208 (53%)	110 (100%)	0	100	100
44	1R	96/110 (87%)	96 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
45	1S	130/244 (53%)	130 (100%)	0	100	100
46	1T	133/229 (58%)	133 (100%)	0	100	100
47	1U	114/147 (78%)	114 (100%)	0	100	100
48	1V	132/133 (99%)	132 (100%)	0	100	100
49	1W	181/216 (84%)	181 (100%)	0	100	100
50	1X	186/235 (79%)	186 (100%)	0	100	100
51	1Y	80/127 (63%)	80 (100%)	0	100	100
52	1Z	150/173 (87%)	150 (100%)	0	100	100
53	1a	102/128 (80%)	102 (100%)	0	100	100
54	1b	88/95 (93%)	88 (100%)	0	100	100
55	1c	51/119 (43%)	51 (100%)	0	100	100
56	1d	42/119 (35%)	42 (100%)	0	100	100
57	1e	49/57 (86%)	49 (100%)	0	100	100
58	1f	35/129 (27%)	35 (100%)	0	100	100
59	1g	84/152 (55%)	84 (100%)	0	100	100
60	1h	36/87 (41%)	36 (100%)	0	100	100
61	1i	152/203 (75%)	152 (100%)	0	100	100
62	1j	64/79 (81%)	64 (100%)	0	100	100
63	1k	105/106 (99%)	105 (100%)	0	100	100
64	1l	189/209 (90%)	189 (100%)	0	100	100
65	1m	107/112 (96%)	107 (100%)	0	100	100
66	1o	71/105 (68%)	71 (100%)	0	100	100
67	1p	101/108 (94%)	101 (100%)	0	100	100
68	1q	41/65 (63%)	41 (100%)	0	100	100
69	1r	83/138 (60%)	82 (99%)	1 (1%)	67	82
70	1s	103/155 (66%)	103 (100%)	0	100	100
71	1t	417/423 (99%)	417 (100%)	0	100	100
72	1u	578/663 (87%)	578 (100%)	0	100	100
73	1v	374/461 (81%)	374 (100%)	0	100	100
78	a	252/374 (67%)	252 (100%)	0	100	100
79	b	68/71 (96%)	68 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
80	c	25/116 (22%)	25 (100%)	0	100	100
81	d	65/93 (70%)	65 (100%)	0	100	100
82	e	226/339 (67%)	226 (100%)	0	100	100
83	f	321/351 (92%)	321 (100%)	0	100	100
84	h	271/337 (80%)	271 (100%)	0	100	100
85	i	272/629 (43%)	271 (100%)	1 (0%)	89	93
86	j	330/355 (93%)	330 (100%)	0	100	100
87	k	22/106 (21%)	22 (100%)	0	100	100
88	A	177/182 (97%)	177 (100%)	0	100	100
All	All	11869/16368 (72%)	11859 (100%)	10 (0%)	92	96

5 of 10 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
29	1C	227	ARG
69	1r	68	HIS
85	i	375	LEU
20	U	65	GLU
20	U	69	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 92 such sidechains are listed below:

Mol	Chain	Res	Type
65	1m	13	ASN
73	1v	330	ASN
68	1q	49	GLN
72	1u	83	ASN
78	a	397	ASN

5.3.3 RNA ⓘ

Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
26	1	2910/2922 (99%)	539 (18%)	28 (0%)
27	3	117/118 (99%)	24 (20%)	1 (0%)
75	5	75/76 (98%)	12 (16%)	0
76	2	1583/1591 (99%)	267 (16%)	11 (0%)
77	6	5/6 (83%)	0	0

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Mol	Chain	Analysed	Backbone Outliers	Pucker Outliers
All	All	4690/4713 (99%)	842 (17%)	40 (0%)

5 of 842 RNA backbone outliers are listed below:

Mol	Chain	Res	Type
26	1	49	G
26	1	50	G
26	1	51	A
26	1	54	G
26	1	63	A

5 of 40 RNA pucker outliers are listed below:

Mol	Chain	Res	Type
27	3	12	U
76	2	1701	C
76	2	103	A
76	2	493	A
76	2	1706	C

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

21 non-standard protein/DNA/RNA residues are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
26	2MA	1	2808	26,89	19,25,26	3.40	6 (31%)	21,37,40	2.31	4 (19%)
76	MA6	2	1827	76	18,26,27	1.30	2 (11%)	19,38,41	3.60	3 (15%)
26	OMU	1	2857	26,89	19,22,23	2.97	8 (42%)	26,31,34	1.72	4 (15%)
26	PSU	1	2910	26	18,21,22	1.00	2 (11%)	22,30,33	1.70	2 (9%)
26	OMC	1	2803	26,89	19,22,23	2.73	7 (36%)	26,31,34	0.98	1 (3%)
76	4OC	2	1664	76	20,23,24	3.16	8 (40%)	26,32,35	0.88	1 (3%)
26	PSU	1	2885	26,92	18,21,22	1.05	3 (16%)	22,30,33	1.83	5 (22%)

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	#|Z| > 2	Counts	RMSZ	#|Z| > 2
26	PSU	1	1105	26	18,21,22	1.03	2 (11%)	22,30,33	1.78	3 (13%)
76	2MG	2	1825	76	18,26,27	2.56	6 (33%)	16,38,41	1.71	3 (18%)
75	5MU	5	54	75	19,22,23	7.67	9 (47%)	28,32,35	3.49	10 (35%)
26	PSU	1	891	26,89	18,21,22	1.07	2 (11%)	22,30,33	1.84	4 (18%)
26	H2U	1	2754	26	18,21,22	0.69	0	21,30,33	1.15	1 (4%)
76	G7M	2	525	76	20,26,27	2.09	5 (25%)	17,39,42	1.24	2 (11%)
76	UR3	2	1807	76	19,22,23	2.58	6 (31%)	26,32,35	1.34	1 (3%)
75	PSU	5	55	75	18,21,22	1.10	1 (5%)	22,30,33	1.77	4 (18%)
26	PSU	1	2762	26	18,21,22	0.98	2 (11%)	22,30,33	1.75	4 (18%)
76	MA6	2	1828	76	18,26,27	1.30	2 (11%)	19,38,41	3.53	2 (10%)
26	OMG	1	2560	26,75,92	18,26,27	2.40	8 (44%)	19,38,41	1.46	4 (21%)
75	4SU	5	8	75	18,21,22	3.97	7 (38%)	26,30,33	2.36	4 (15%)
75	5MC	5	32	75	18,22,23	3.42	7 (38%)	26,32,35	1.15	2 (7%)
26	5MU	1	2257	26,92	19,22,23	1.47	4 (21%)	28,32,35	2.38	6 (21%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
26	2MA	1	2808	26,89	-	2/3/25/26	0/3/3/3
76	MA6	2	1827	76	-	0/7/29/30	0/3/3/3
26	OMU	1	2857	26,89	-	0/9/27/28	0/2/2/2
26	PSU	1	2910	26	-	0/7/25/26	0/2/2/2
26	OMC	1	2803	26,89	-	0/9/27/28	0/2/2/2
76	4OC	2	1664	76	-	2/9/29/30	0/2/2/2
26	PSU	1	2885	26,92	-	1/7/25/26	0/2/2/2
26	PSU	1	1105	26	-	0/7/25/26	0/2/2/2
76	2MG	2	1825	76	-	2/5/27/28	0/3/3/3
75	5MU	5	54	75	-	0/7/25/26	0/2/2/2
26	PSU	1	891	26,89	-	1/7/25/26	0/2/2/2
26	H2U	1	2754	26	-	0/7/38/39	0/2/2/2
76	G7M	2	525	76	-	3/3/25/26	0/3/3/3
76	UR3	2	1807	76	-	0/7/25/26	0/2/2/2
75	PSU	5	55	75	-	0/7/25/26	0/2/2/2
26	PSU	1	2762	26	-	0/7/25/26	0/2/2/2
76	MA6	2	1828	76	-	0/7/29/30	0/3/3/3

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Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
26	OMG	1	2560	26,75,92	-	1/5/27/28	0/3/3/3
75	4SU	5	8	75	-	0/7/25/26	0/2/2/2
75	5MC	5	32	75	-	0/7/25/26	0/2/2/2
26	5MU	1	2257	26,92	-	2/7/25/26	0/2/2/2

The worst 5 of 97 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
75	5	54	5MU	C4-C5	22.55	1.82	1.44
75	5	54	5MU	C6-N1	15.59	1.64	1.38
75	5	54	5MU	C4-N3	-12.11	1.16	1.38
75	5	54	5MU	C6-C5	-12.08	1.14	1.34
26	1	2808	2MA	C4-N3	9.19	1.50	1.35

The worst 5 of 70 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
76	2	1828	MA6	N1-C6-N6	-13.99	102.33	117.06
76	2	1827	MA6	N1-C6-N6	-13.99	102.34	117.06
75	5	54	5MU	C5-C4-N3	11.05	124.75	115.31
75	5	8	4SU	C4-N3-C2	-8.22	119.36	127.34
75	5	54	5MU	C5-C6-N1	-7.86	115.25	123.34

There are no chirality outliers.

5 of 14 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
26	1	2560	OMG	C1'-C2'-O2'-CM2
76	2	525	G7M	C3'-C4'-C5'-O5'
76	2	1664	4OC	O4'-C4'-C5'-O5'
76	2	1825	2MG	O4'-C4'-C5'-O5'
26	1	2808	2MA	O4'-C4'-C5'-O5'

There are no ring outliers.

7 monomers are involved in 10 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
76	2	1664	4OC	2	0
26	1	1105	PSU	1	0
76	2	1825	2MG	1	0
75	5	54	5MU	1	0

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Mol	Chain	Res	Type	Clashes	Symm-Clashes
26	1	891	PSU	2	0
76	2	1828	MA6	2	0
26	1	2560	OMG	2	0

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 435 ligands modelled in this entry, 433 are monoatomic - leaving 2 for Mogul analysis.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\#\|Z\| > 2$	Counts	RMSZ	$\#\|Z\| > 2$
90	ATP	W	501	89	26,33,33	0.91	1 (3%)	31,52,52	1.56	5 (16%)
91	CLM	1	3201	-	19,20,20	1.64	3 (15%)	23,27,27	1.14	2 (8%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
90	ATP	W	501	89	-	0/18/38/38	0/3/3/3
91	CLM	1	3201	-	-	2/20/22/22	0/1/1/1

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
91	1	3201	CLM	C2-N2	4.63	1.44	1.34
91	1	3201	CLM	O9B-N9	-3.16	1.17	1.22
91	1	3201	CLM	O2-C2	-2.90	1.17	1.23
90	W	501	ATP	C5-C4	2.22	1.46	1.40

The worst 5 of 7 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
90	W	501	ATP	PA-O3A-PB	-3.90	119.45	132.83
90	W	501	ATP	C3'-C2'-C1'	3.52	106.28	100.98
90	W	501	ATP	PB-O3B-PG	-3.33	121.39	132.83
90	W	501	ATP	N3-C2-N1	-3.17	123.72	128.68
91	1	3201	CLM	C5-C3-N2	-2.92	104.52	110.05

There are no chirality outliers.

All (2) torsion outliers are listed below:

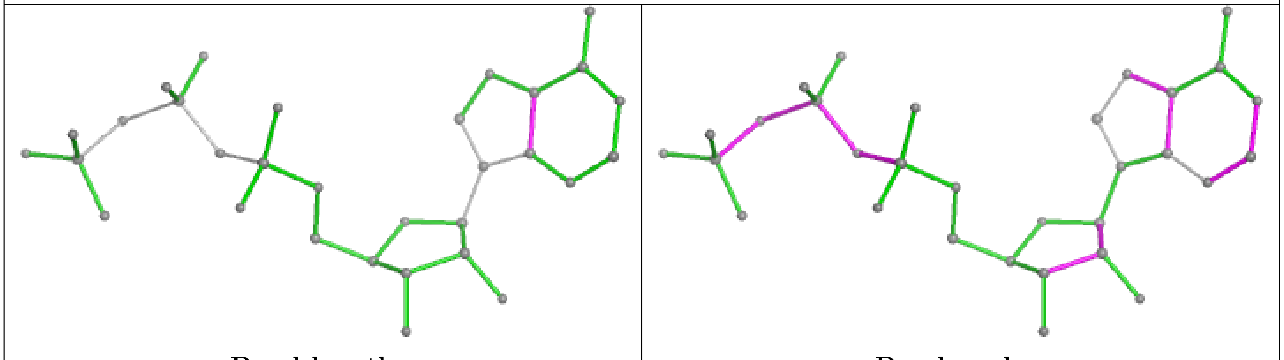
Mol	Chain	Res	Type	Atoms
91	1	3201	CLM	N2-C3-C4-O4
91	1	3201	CLM	C5-C3-C4-O4

There are no ring outliers.

No monomer is involved in short contacts.

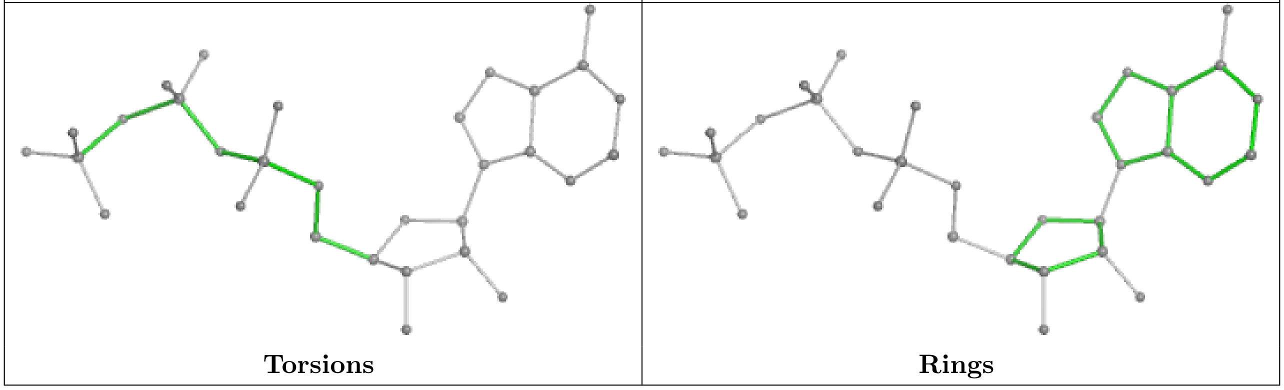
The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less then 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.

Ligand ATP W 501



Bond lengths

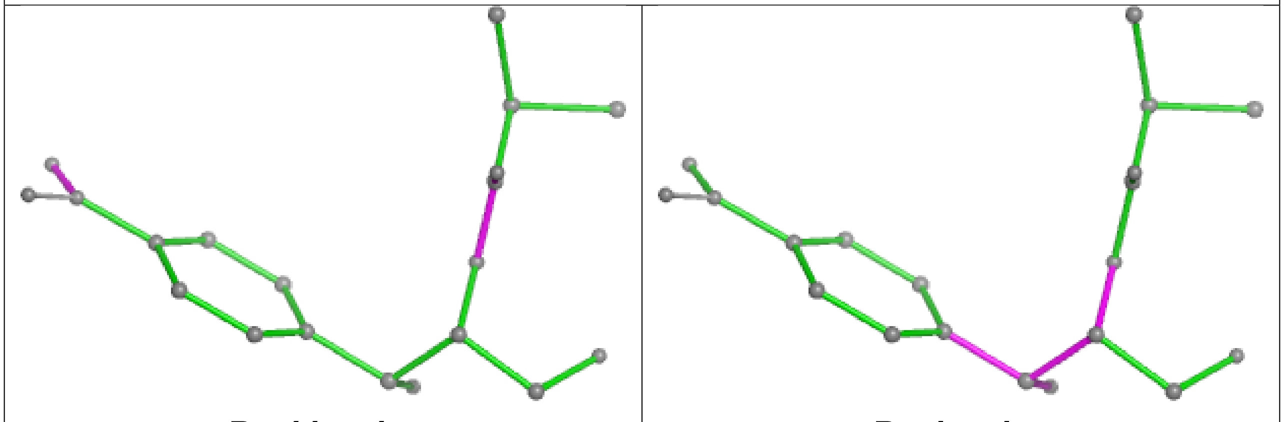
Bond angles



Torsions

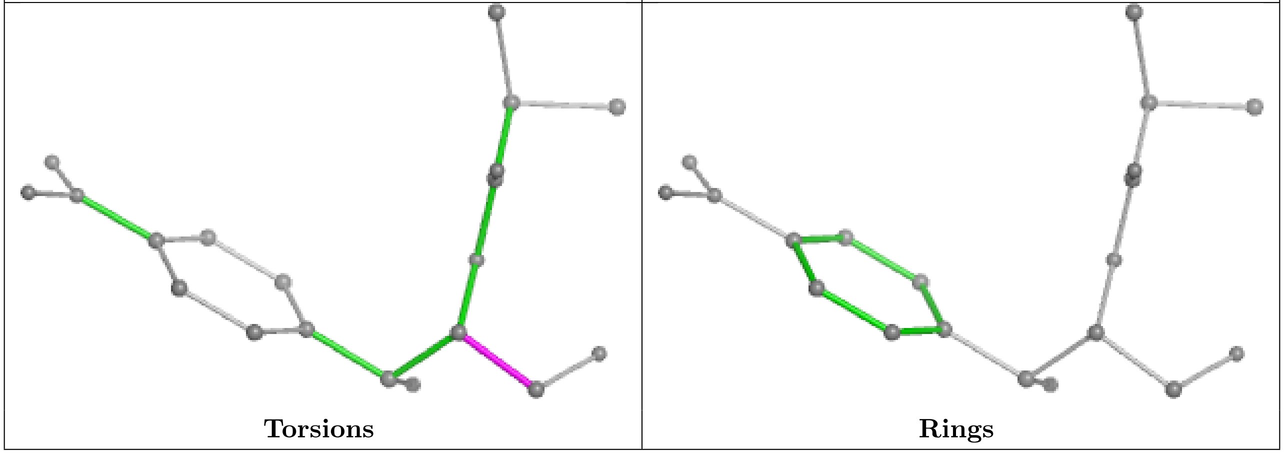
Rings

Ligand CLM 1 3201



Bond lengths

Bond angles



Torsions

Rings

5.7 Other polymers ⓘ

There are no such residues in this entry.

5.8 Polymer linkage issues ⓘ

The following chains have linkage breaks:

Mol	Chain	Number of breaks
26	1	11
76	2	7

The worst 5 of 18 chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	1	295:U	O3'	307:A	P	27.62
1	1	261:G	O3'	270:A	P	26.81
1	2	95:A	O3'	101:A	P	23.00
1	1	1704:U	O3'	1831:A	P	17.44
1	1	363:A	O3'	405:U	P	17.26

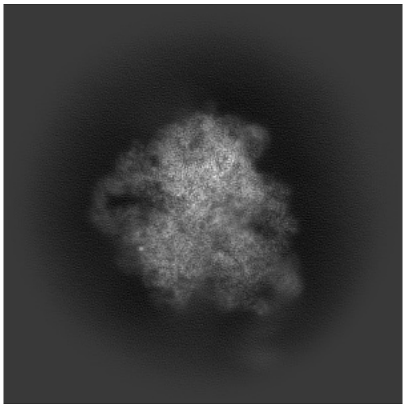
6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-50011. These allow visual inspection of the internal detail of the map and identification of artifacts.

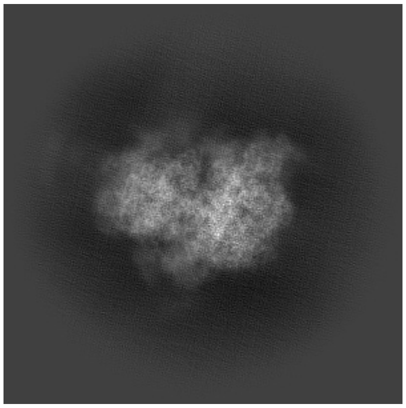
Images derived from a raw map, generated by summing the deposited half-maps, are presented below the corresponding image components of the primary map to allow further visual inspection and comparison with those of the primary map.

6.1 Orthogonal projections ⓘ

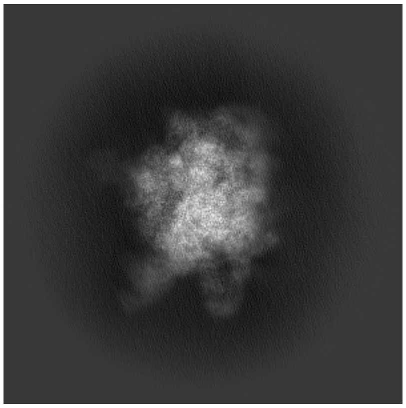
6.1.1 Primary map



X

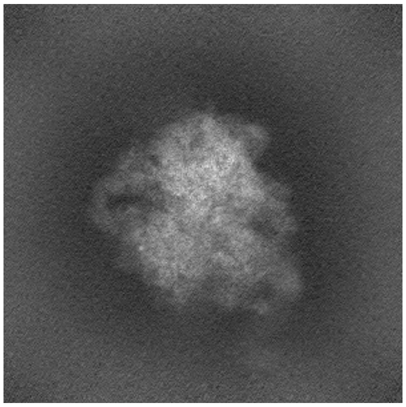


Y

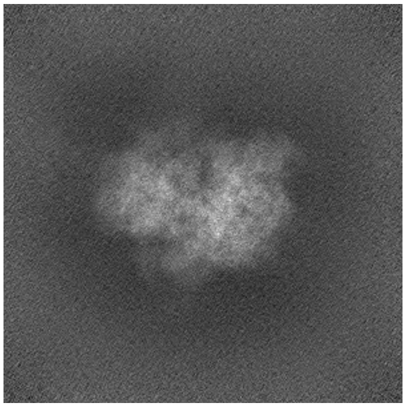


Z

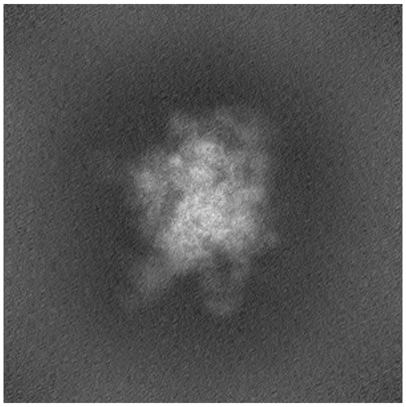
6.1.2 Raw map



X



Y

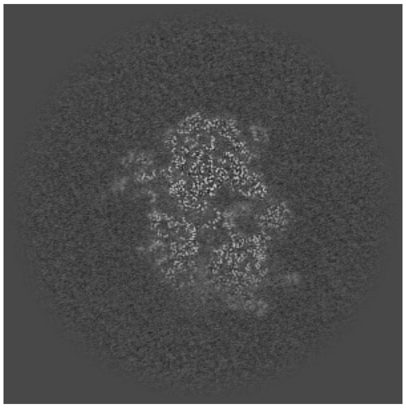


Z

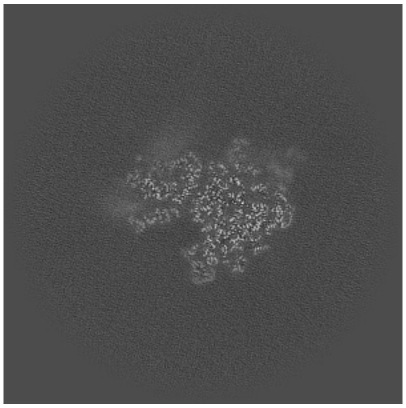
The images above show the map projected in three orthogonal directions.

6.2 Central slices

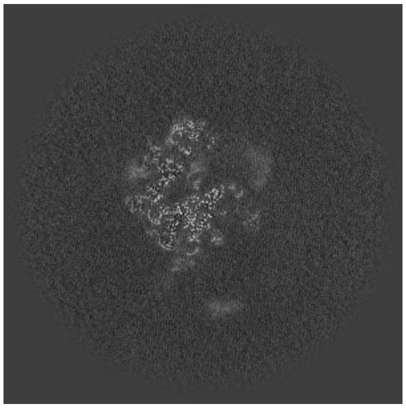
6.2.1 Primary map



X Index: 282

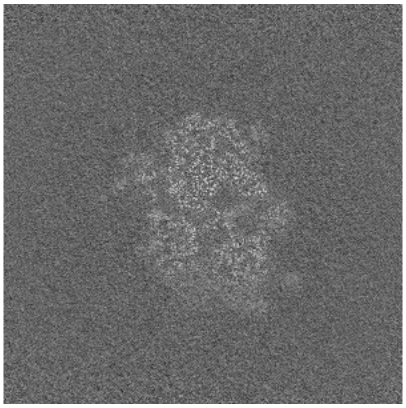


Y Index: 282

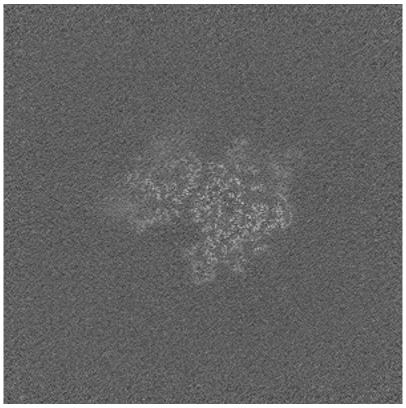


Z Index: 282

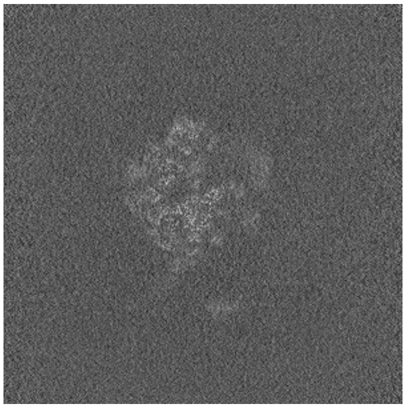
6.2.2 Raw map



X Index: 282



Y Index: 282

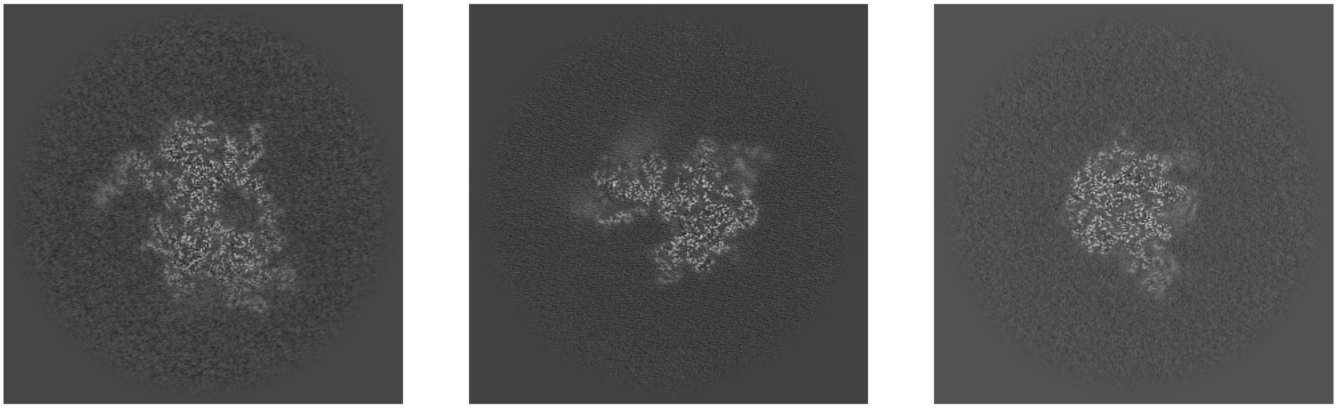


Z Index: 282

The images above show central slices of the map in three orthogonal directions.

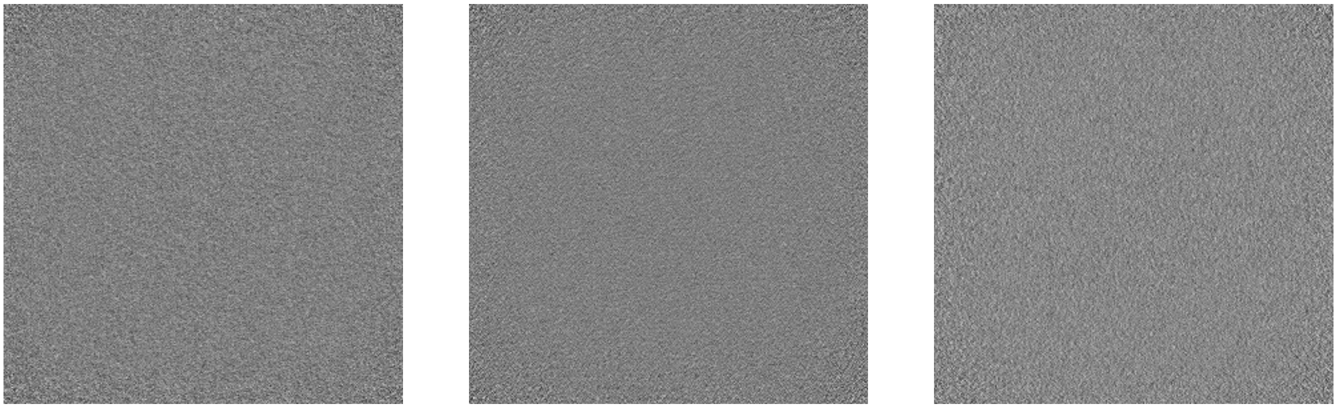
6.3 Largest variance slices ⓘ

6.3.1 Primary map



X Index: 293 Y Index: 285 Z Index: 325

6.3.2 Raw map

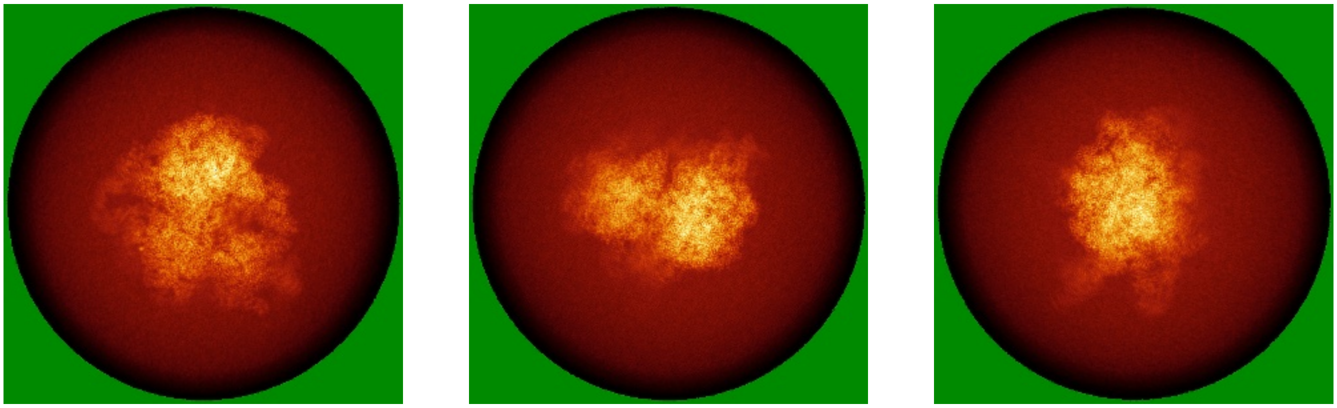


X Index: 0 Y Index: 0 Z Index: 0

The images above show the largest variance slices of the map in three orthogonal directions.

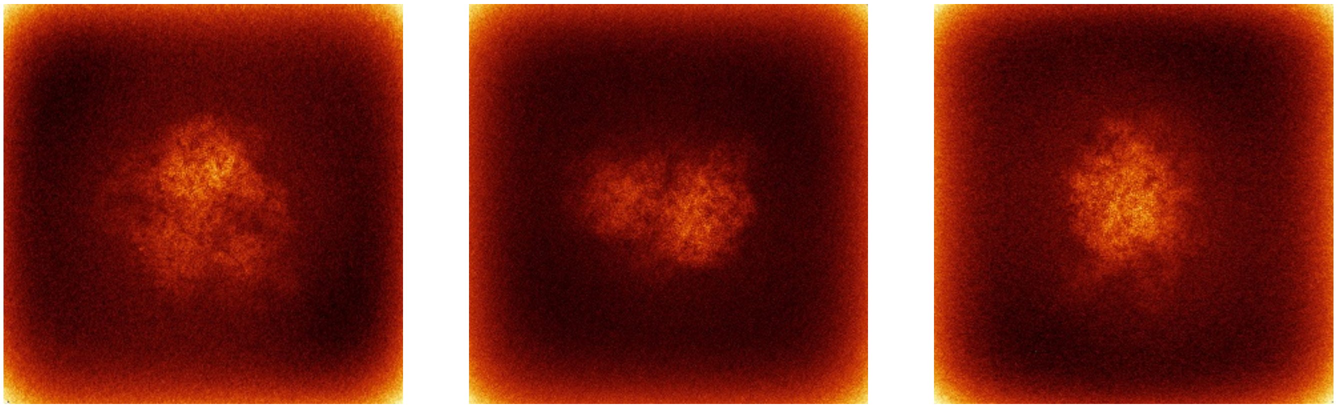
6.4 Orthogonal standard-deviation projections (False-color)

6.4.1 Primary map



X Y Z

6.4.2 Raw map

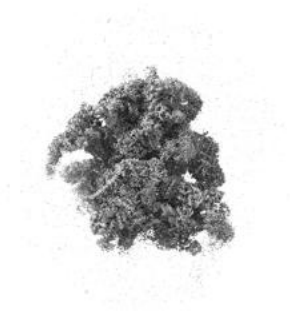


X Y Z

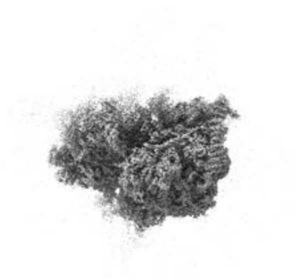
The images above show the map standard deviation projections with false color in three orthogonal directions. Minimum values are shown in green, max in blue, and dark to light orange shades represent small to large values respectively.

6.5 Orthogonal surface views (i)

6.5.1 Primary map



X



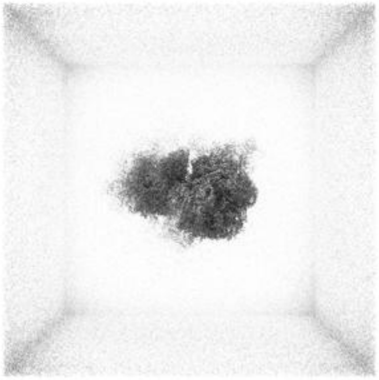
Y

Z

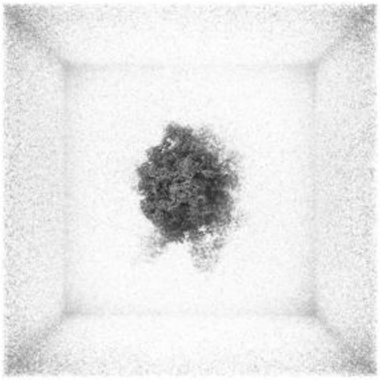
The images above show the 3D surface view of the map at the recommended contour level 0.0796. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

6.5.2 Raw map

X



Y



Z

These images show the 3D surface of the raw map. The raw map's contour level was selected so that its surface encloses the same volume as the primary map does at its recommended contour level.

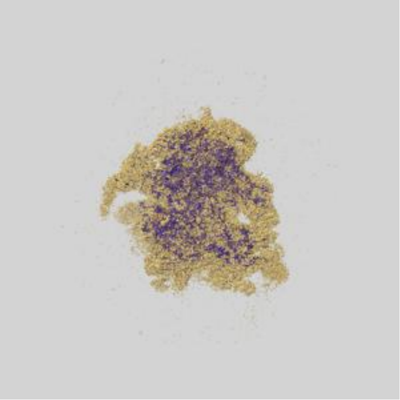
6.6 Mask visualisation

This section shows the 3D surface view of the primary map at 50% transparency overlaid with the specified mask at 0% transparency

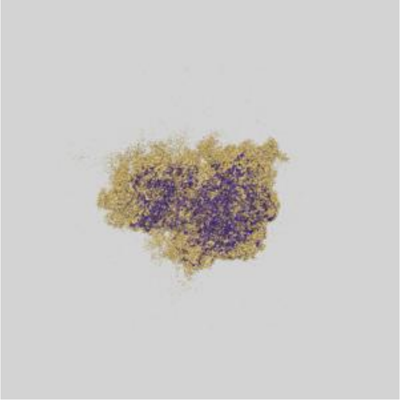
A mask typically either:

- Encompasses the whole structure
- Separates out a domain, a functional unit, a monomer or an area of interest from a larger structure

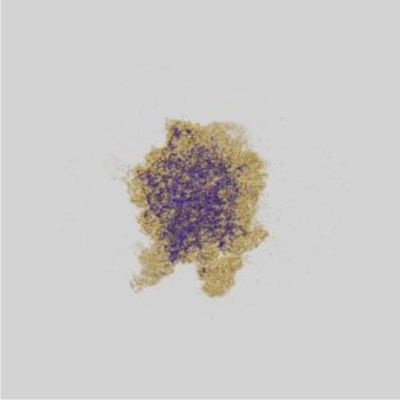
6.6.1 emd_50011_msk_1.map



X



Y

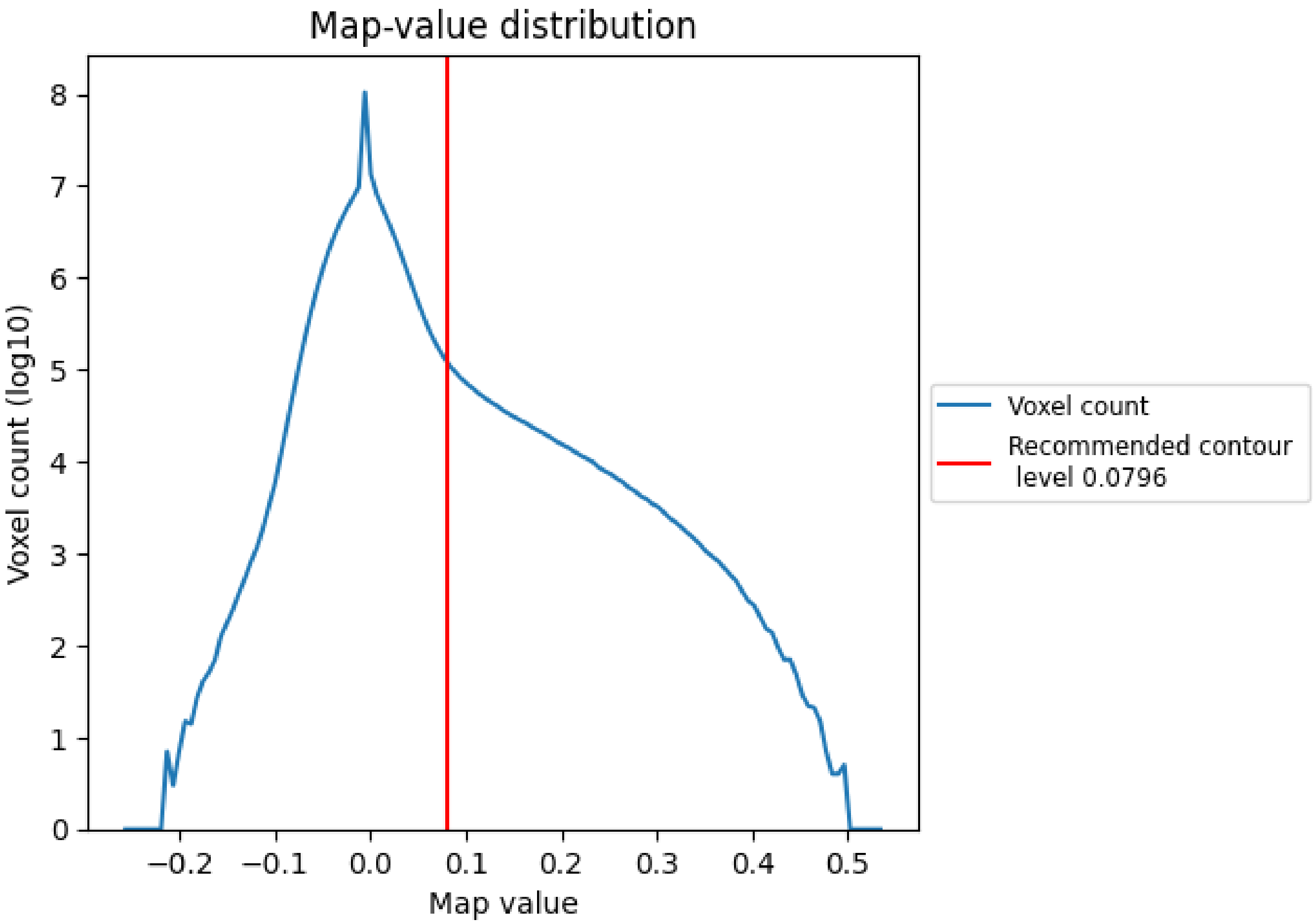


Z

7 Map analysis (i)

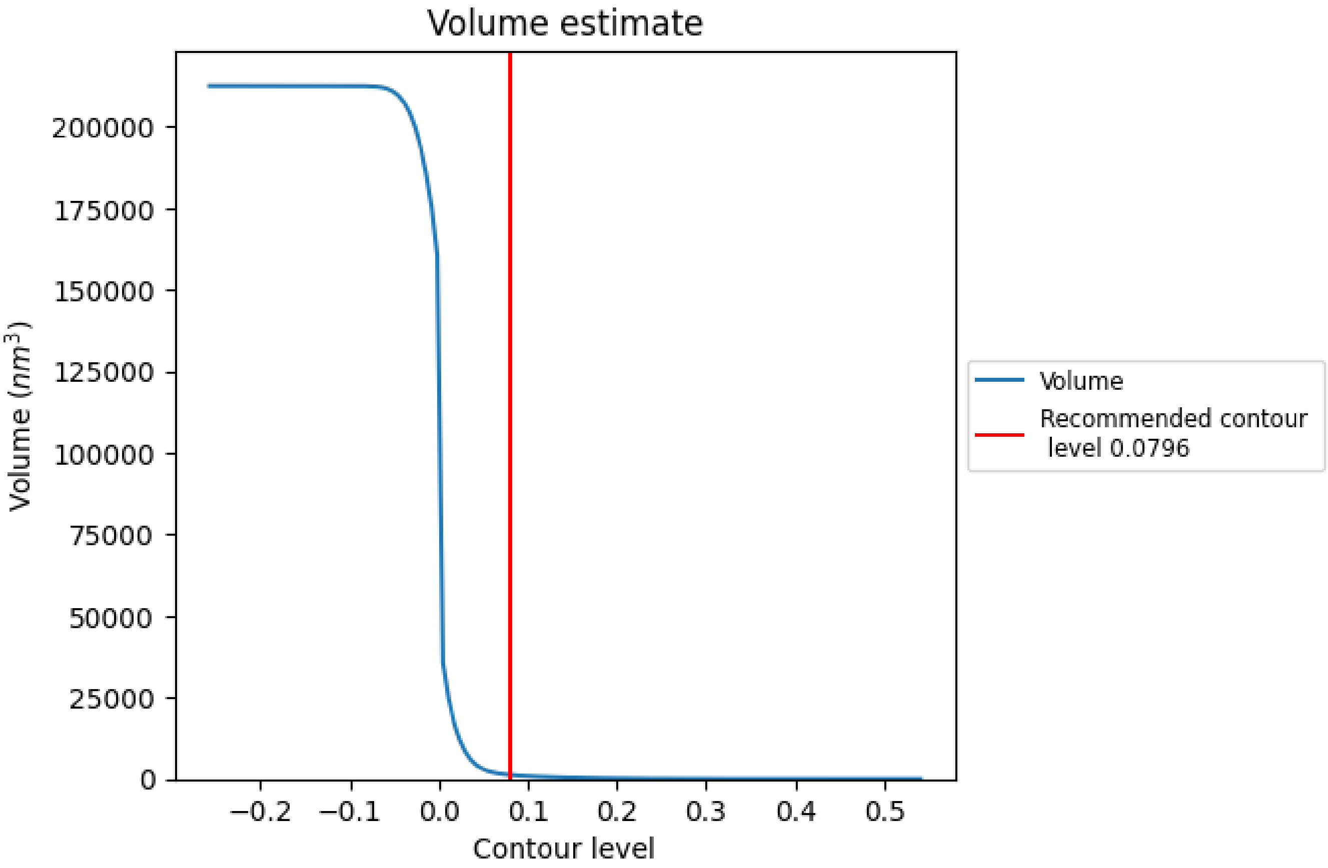
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution (i)



The map-value distribution is plotted in 128 intervals along the x-axis. The y-axis is logarithmic. A spike in this graph at zero usually indicates that the volume has been masked.

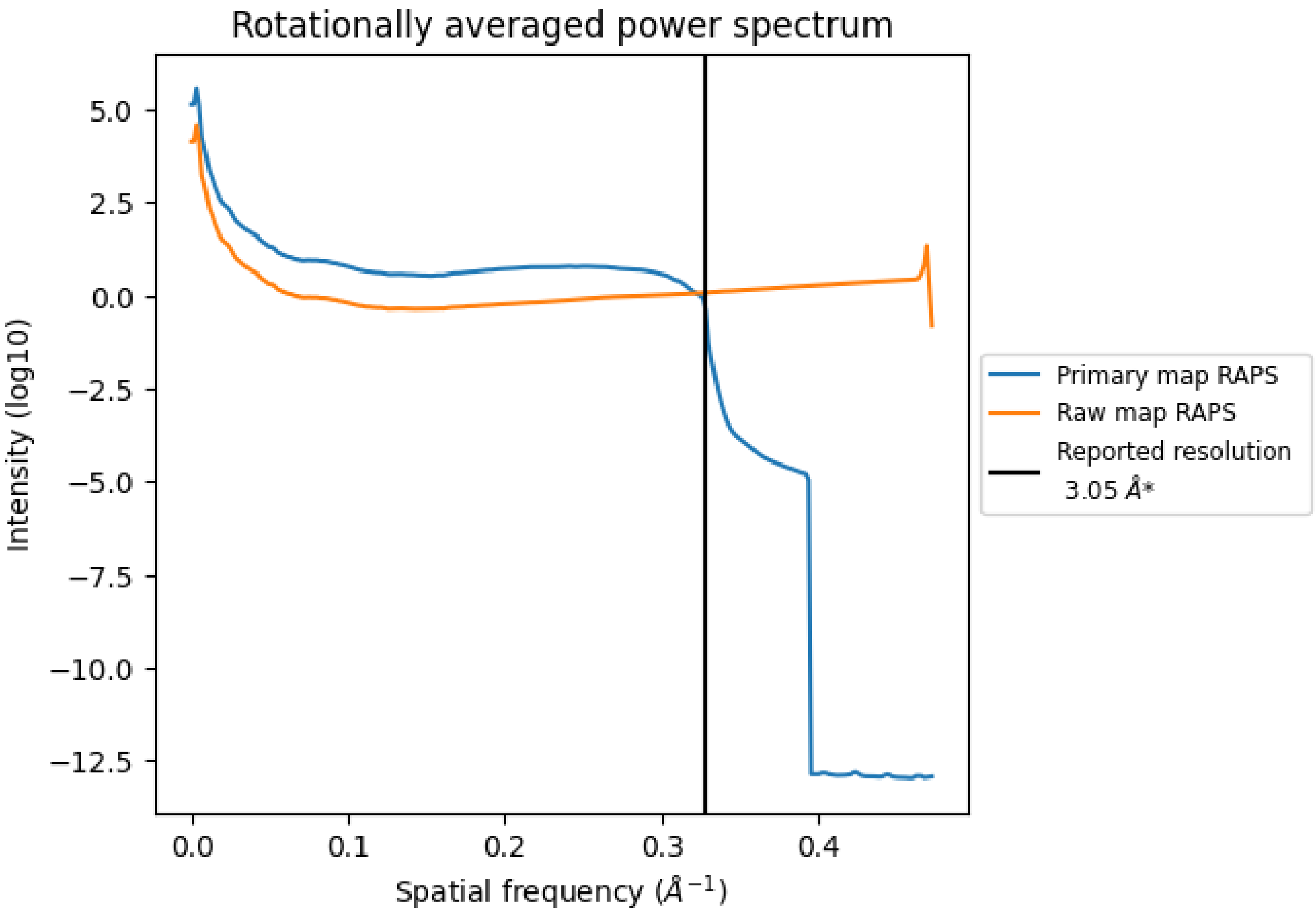
7.2 Volume estimate ⓘ



The volume at the recommended contour level is 1277 nm^3; this corresponds to an approximate mass of 1154 kDa.

The volume estimate graph shows how the enclosed volume varies with the contour level. The recommended contour level is shown as a vertical line and the intersection between the line and the curve gives the volume of the enclosed surface at the given level.

7.3 Rotationally averaged power spectrum ⓘ

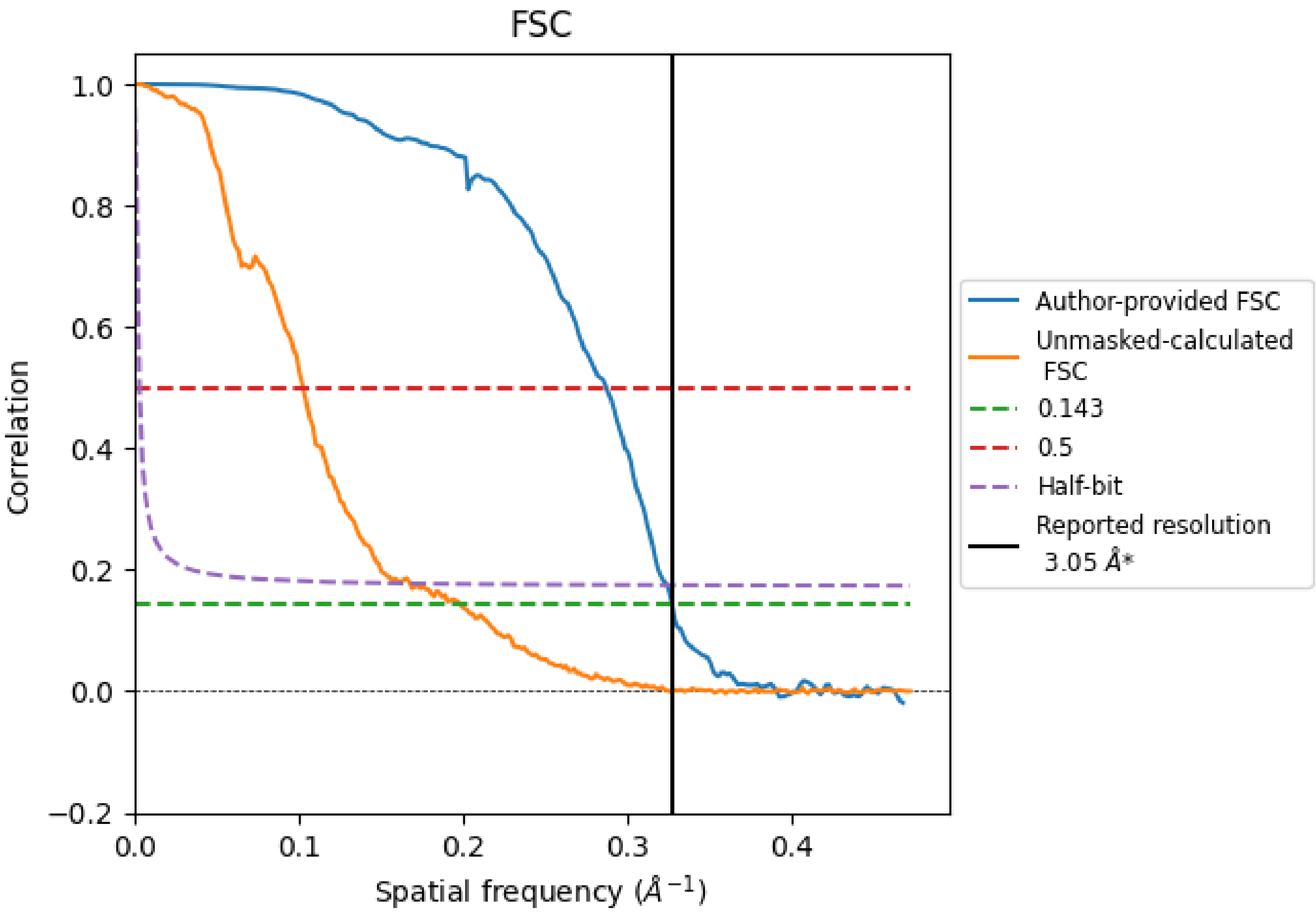


*Reported resolution corresponds to spatial frequency of 0.328 Å^{-1}

8 Fourier-Shell correlation ⓘ

Fourier-Shell Correlation (FSC) is the most commonly used method to estimate the resolution of single-particle and subtomogram-averaged maps. The shape of the curve depends on the imposed symmetry, mask and whether or not the two 3D reconstructions used were processed from a common reference. The reported resolution is shown as a black line. A curve is displayed for the half-bit criterion in addition to lines showing the 0.143 gold standard cut-off and 0.5 cut-off.

8.1 FSC ⓘ



*Reported resolution corresponds to spatial frequency of 0.328 Å^{-1}

8.2 Resolution estimates (i)

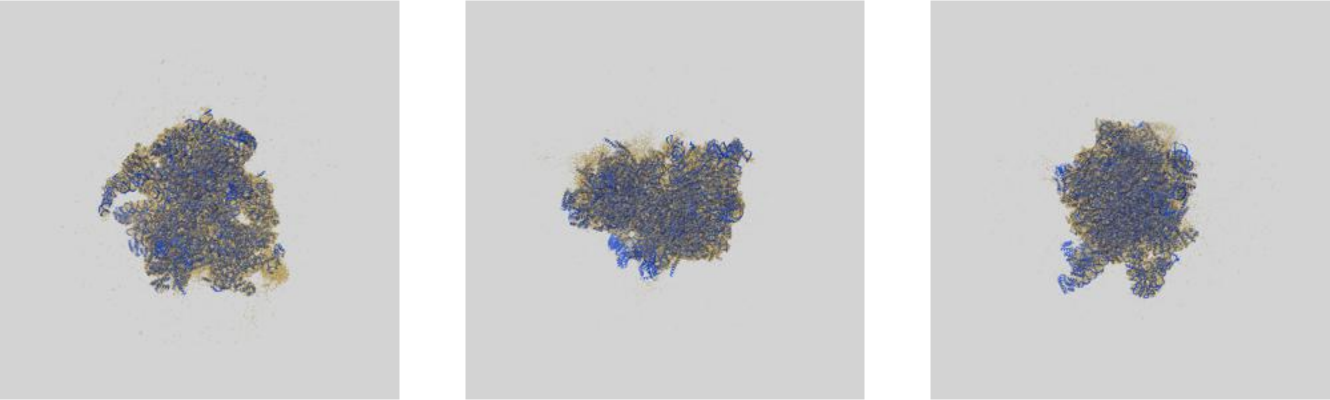
Resolution estimate (Å)	**Estimation criterion (FSC cut-off)**		
	0.143	0.5	Half-bit
Reported by author	3.05	-	-
Author-provided FSC curve	3.05	3.48	3.08
Unmasked-calculated*	5.04	9.71	5.95

*Resolution estimate based on FSC curve calculated by comparison of deposited half-maps. The value from deposited half-maps intersecting FSC 0.143 CUT-OFF 5.04 differs from the reported value 3.05 by more than 10 %

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-50011 and PDB model 9EVS. Per-residue inclusion information can be found in section 3 on page 23.

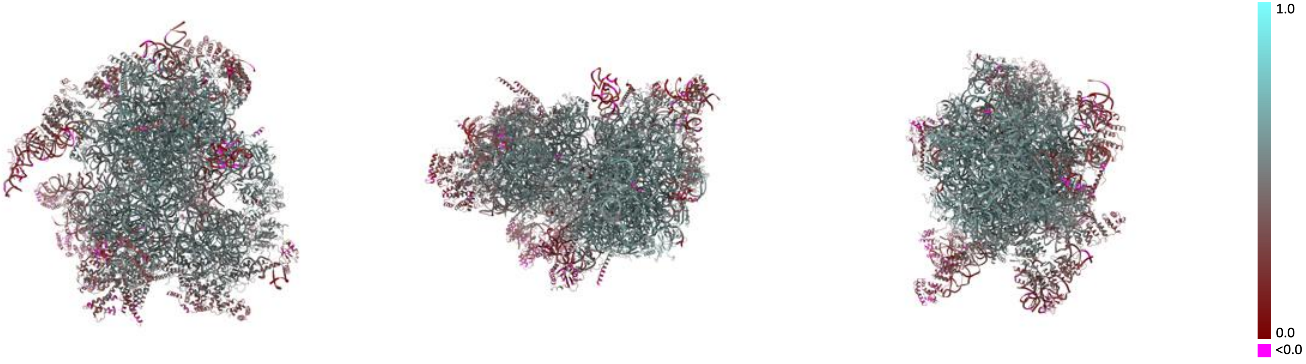
9.1 Map-model overlay ⓘ



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.0796 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

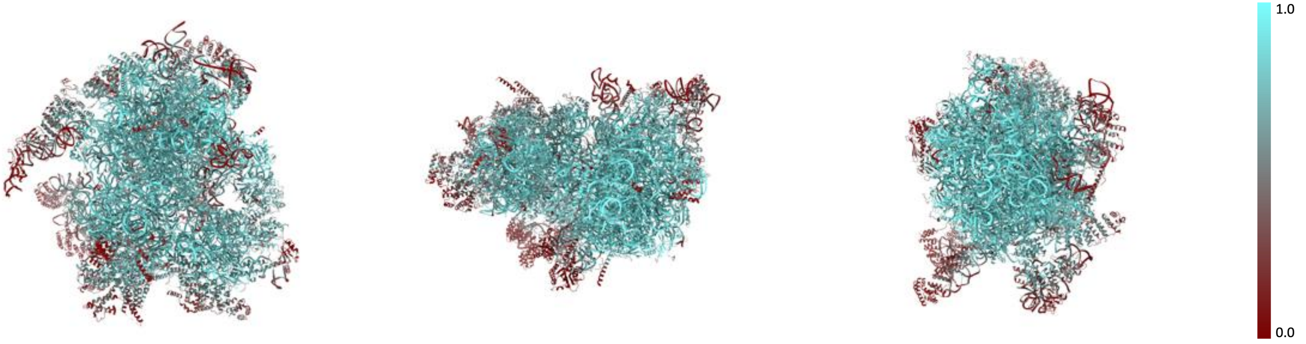
9.2 Q-score mapped to coordinate model ⓘ



X Y Z

The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions at which atoms can be resolved. Low Q-score values may therefore be expected for many entries.

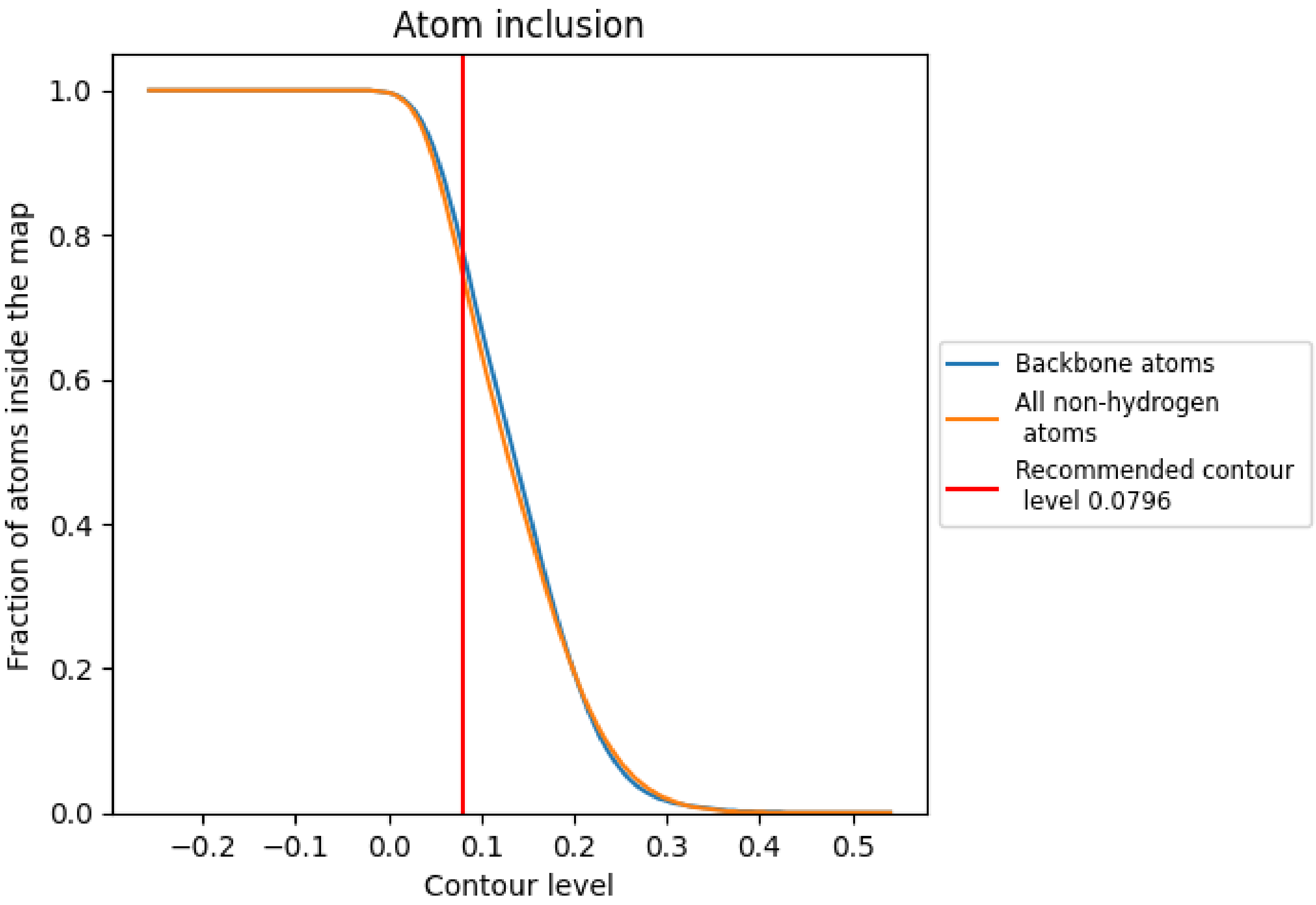
9.3 Atom inclusion mapped to coordinate model ⓘ



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.0796).

9.4 Atom inclusion ⓘ



At the recommended contour level, 78% of all backbone atoms, 75% of all non-hydrogen atoms, are inside the map.

9.5 Map-model fit summary ⓘ

The table lists the average atom inclusion at the recommended contour level (0.0796) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.7490	0.4830
1	0.8610	0.5200
1B	0.8510	0.5650
1C	0.7010	0.5050
1D	0.8610	0.5710
1E	0.8800	0.5720
1F	0.7420	0.5240
1G	0.6510	0.4930
1H	0.6770	0.4830
1I	0.0220	0.1690
1J	0.0920	0.1880
1K	0.8180	0.5400
1L	0.8220	0.5680
1M	0.8570	0.5660
1N	0.7890	0.5350
1O	0.8840	0.5740
1P	0.8430	0.5530
1Q	0.8110	0.5530
1R	0.9310	0.5900
1S	0.8270	0.5670
1T	0.8840	0.5750
1U	0.8200	0.5590
1V	0.8360	0.5640
1W	0.2130	0.2470
1X	0.7670	0.5210
1Y	0.8280	0.5540
1Z	0.7440	0.5130
1a	0.8600	0.5550
1b	0.8710	0.5680
1c	0.8050	0.5300
1d	0.9210	0.5750
1e	0.8200	0.5520
1f	0.9770	0.6090
1g	0.8910	0.5810
1h	0.8770	0.5720

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Chain	Atom inclusion	Q-score
1i	0.6960	0.5070
1j	0.8940	0.5730
1k	0.8810	0.5730
1l	0.6310	0.4620
1m	0.2300	0.2880
1o	0.1180	0.2320
1p	0.7760	0.5430
1q	0.8400	0.5550
1r	0.8000	0.5250
1s	0.7830	0.5280
1t	0.5730	0.4040
1u	0.4600	0.3640
1v	0.6100	0.4180
1x	0.8950	0.6300
2	0.8760	0.5060
3	0.9400	0.5490
5	0.7550	0.4260
6	0.6610	0.5240
A	0.7660	0.5170
B	0.5750	0.4150
C	0.7130	0.4830
D	0.6730	0.4740
E	0.7820	0.5330
F	0.7040	0.4850
G	0.8330	0.5470
H	0.6380	0.4690
I	0.8060	0.5270
J	0.7400	0.5030
K	0.7660	0.5340
L	0.7530	0.5200
M	0.8250	0.5460
N	0.7780	0.5340
O	0.8180	0.5280
P	0.7660	0.5260
Q	0.7350	0.5030
R	0.4240	0.3540
S	0.6830	0.5110
T	0.8410	0.5580
U	0.5330	0.3830
V	0.6440	0.4420
W	0.7000	0.4850
X	0.5160	0.3830

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Chain	Atom inclusion	Q-score
Y	0.6910	0.4800
Z	0.5970	0.3770
a	0.5220	0.3680
b	0.4680	0.3790
c	0.8340	0.5570
d	0.5750	0.4190
e	0.6980	0.4680
f	0.5830	0.4150
h	0.1910	0.2040
i	0.2840	0.2850
j	0.0290	0.1450
k	0.5630	0.4150